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An Address
ON
TRAUMATIC NEURASTHENIA.

Delivered to the Oxford Medical Society on Nov. 9th, 1923.

BY E. FARQUHAR BUZZARD, M.D. OXF., F.R.C.P. LOND.,
PHYSICIAN TO ST. THOMAS'S HOSPITAL.

THE subject of my address is one which, for a variety of reasons, should be of interest to everybody. It is constantly before members of our profession as a difficult problem in relation to diagnosis and treatment; it is a source of perpetual annoyance to lawyers whose minds are as confused as are those of their medical brethren in regard to its nature and significance; and it is a matter of economic importance to the community at large in that it occasions an enormous waste of time, energy, and money. Such reasons alone might be sufficient to justify my choice, but there is another which has still more weight. The term, "traumatic neurasthenia" and the uses to which it has been put have brought profound discredit, and, I feel bound to add, in many instances deserved discredit, to our profession. As far as I can see our professional reputation is not likely to be reinstated in the eyes of the public or of the law until every medical man and woman has a clear conception of what is meant by this much abused term, and is able to express that conception in language as lucidly as he or she would explain the meaning of "fractured clavicle" or "gastric ulcer." It is, perhaps, fortunate that we are not often called upon to interpret in public all the terms which are to be found in an index of medical nomenclature. It is most unfortunate that we are frequently asked in public to indicate exactly the meaning of "neurasthenia" and its causal relationship to trauma, and it is a calamity that our efforts to do so should so often evoke derision from the body of the court or judicial witticisms from the bench.

It is only necessary to hear the evidence given in workmen's compensation cases in regard to traumatic neurasthenia in order to understand how difficult it is for the legal profession to take this evidence seriously. In one such instance the following statement was made by a medical man in describing a patient alleged to be suffering from traumatic neurasthenia: "My opinion of this case is that his symptoms are entirely functional. The question is how much of these are genuine. Probably some of the symptoms are genuine, but he is giving way to them." The lay mind must be considerably exercised to find the expert knowledge wrapped up in such an opinion. On the other hand, I confess to have been equally confused by the words I shall quote from a lawyer's letter: "The employer's case is that the man's inability to work is caused by his brooding over the effects of the accident and that he is suffering from weakness of will and a fixed but erroneous idea that he is a chronic invalid. If they establish this proposition, then the court would have power to refuse further compensation. If, on the other hand, this man is suffering from neurasthenia, as we are advised, he is then entitled to a continuance of the compensation." To my mind the employer's proposition affords a definition, although perhaps a crude one, of what is meant by the term "neurasthenia." In other words, I should regard the alternative diagnoses, on the choice of which legal judgment would depend, as meaning one and the same thing. Herein lies the crux of the whole problem, and the cause of the confusion which at present fogs the medical and legal mind. In order to disperse these mists it is essential that we should establish clearly in the first place the nature of neurasthenia, and secondly the causal relationship between trauma and that condition. It is my purpose to examine critically the facts with which experience has provided us, and to consider whether, as a result of this examination, we can arrive at some scientific and practical conception of what the term "traumatic neurasthenia" really means.

THREE GROUPS OF CASES.

Let us begin by recording what experience teaches us in regard to types of neurasthenic patients who attribute their condition to injuries. There are three groups of cases. The first group, which comprises the great majority of cases, can be labelled "anxiety neurosis."

Group 1. "*Anxiety Neurosis.*"—These patients give a history of injury to any part of the body, the head perhaps being the commonest site. They differ in no respect from cases of anxiety neurosis, such as we meet with in ordinary practice without any history of injury, or from the most common type of shell-shock victim met with during the war. They complain of constant "pressure" headache, insomnia, fatigue, giddiness, tremors, inability to concentrate, loss of appetite, and pain and tenderness at the site of injury wherever it may be. When you examine their eyes they blink continually, and each voluntary movement they are asked to perform is carried out feebly, hesitatingly, and perhaps tremulously. Their whole appearance is one of anxiety and misery, but careful examination reveals no evidence of organic mischief.

Group 2. "*Spinal.*"—The second group comprises a much smaller number of patients, but the picture presented is characteristic. It may be labelled the "spinal" or, in more vulgar but descriptive language, the "my poor back" group. The patient invariably walks into your room leaning on a stick in one hand, with the dorsum of the other placed over the lower part of his back. You know at once that the site of his injury is his spine. As a matter of fact many of these patients have suffered only from a sharp attack of lumbago, while making a physical effort in the course of their employment. In addition to their characteristic attitude they often present also the symptoms of anxiety neurosis. Again, examination reveals no sign of organic disease, but there is a superficial tenderness over a great part of the spinal column.

Group 3. "*Hysterical.*"—In this group the anxiety neurosis is often associated with some definite hysterical symptom, such as hemiplegia, monoplegia, paraplegia, &c. These cases are not very common, and their occurrence is immaterial to the question under investigation.

SITE AND SEVERITY OF INJURY.

As already stated, the development of neurasthenia has no constant relationship with the site of injury. The nervous symptoms are more likely to follow a blow on the head, or a strain of the back, but they frequently present themselves after an injury to a foot or hand. Direct injury to any part of the central nervous system, therefore, is not necessary for the production of neurasthenia. On the other hand, it is not unreasonable to suppose that the awe with which the lay mind regards an injury to the skull or to the spine may be sufficient to account for the frequency with which such injuries are followed by neurasthenia. The severity of the injury, again, has no bearing on the development of neurasthenia. The latter may follow trivial injuries to the limbs as well as a severe concussion. But there is one exception to this rule, an exception which is not without significance. It is rare to find an injury which inflicts permanent physical disablement on a patient followed by neurasthenia. The man who loses an arm or a leg as the result of a railway accident does not suffer from an anxiety neurosis, unless, of course, he has entirely other reasons for doing so.

So far a consideration of our experience in cases of traumatic neurasthenia allows us to form two definite conclusions. In the first place, the clinical picture of traumatic neurasthenia is identical with that of anxiety neurosis. In the second place, the incidence

of neurasthenia on trauma is quite independent of the site or severity of the latter. On what does this incidence depend? This is a question which we should be able to answer. We have to find a factor which is always present in cases of traumatic neurasthenia, and which is generally absent when trauma is not followed by the neuropathic features we have described.

From what I have already said it would seem impossible to find that factor on the physical side. Any attempt to correlate the part injured or the nature of the structural injury with the evolution of neurasthenia, has been shown by experience to be doomed to failure. Naturally we turn for light in other directions, and the question of the patient's inherent or constitutional reaction automatically engages attention. We may be tempted to seek for and find in each patient suffering from traumatic neurasthenia some evidence of hereditary nervous instability. There can be no doubt that such a proposition is attractive, and that it contains at least the germ of truth. But does it satisfy our minds as *the* factor determining the development of neurasthenia after trauma? Speaking for myself the answer is in the negative, willing as I am to allow it its legitimate due.

THE QUESTION OF RESPONSIBILITY.

Having given this question much thought, and having seen and studied quite a large number of patients suffering from traumatic neurasthenia, I have come to regard one factor as having a more profound influence than any other in determining the advent of neurasthenia after trauma. I refer to the question of responsibility. Is the patient responsible for the injury, and has he to shoulder the burden of its results, or can he shift that responsibility and that burden on to others? Auto-responsibility or hetero-responsibility? If the latter is to hand then we have the initial preparation of the soil favourable to the growth of neurasthenia. We love to shift responsibility, and, having done so, we have leisure and liberty to study the injury in detail and all the results which it entails. More than that, we are ready to shift the responsibility for recovery on to others, and tacitly to reserve to ourselves the right of determining the length of the illness. What a difference there is between slipping and falling downstairs, due to our own carelessness, and doing the same thing as the result of a push. The emotion of anger and the sense of injury are added to physical discomforts, and are more than likely to prolong disablement. I do not think I am exaggerating the importance of hetero-responsibility, when I submit that it prepares the ground for the crop of nervous symptoms following trauma, but I must offer you some evidence on this point.

Accidents and injuries are among the commonest incidents of everyday life, and certainly not more than one in a thousand is followed by neurasthenia. In the course of years of practice I have seen a large number of cases to which one could apply the name "traumatic neurasthenia," but I cannot recall one in which the responsibility for injury has not been placed away from the patient. These patients have been workmen's compensation cases, railway accident cases, motor accident cases, soldiers, sailors, &c.; employers, insurance companies, railway companies, and the State have supplied the responsibility. Let us take another sphere of action in which accidents, trivial or severe, are frequent—i.e., the hunting field. It is true that one occasionally sees a patient from this source who presents features resembling those of traumatic neurasthenia, but they are always cases of neglected concussion, never cases of injury to other parts. Moreover, such cases are easily cured, whereas traumatic neurasthenia is almost proverbial for its resistance to treatment.

But if hetero-responsibility prepares the soil, whence come the seeds? In order to learn something about traumatic neurasthenia, as in all forms of neurasthenia, you must let your patient talk, you must encourage him to recall every detail of his accident and all subsequent events. He will tell you many things which, apparently unimportant, have great significance. There you will find your seeds.

A TYPICAL STORY.

Let me describe the sort of story you will hear. Smith is injured in an accident occurring in the course of his employment. The accident took place in such a way that it caused a considerable emotional disturbance—that of fear. This is often called shock, but is distinct from surgical shock. The injury caused pain, and the doctor on examining him said: "By Jove, you have had a narrow squeak; an inch to the left and the blow would have broken your back." A restless night during which he remembers that there were only three men doing what ought to have been done by four. This gives rise to the sense of injury. His employers are responsible for his suffering. A mate comes to see him a day or two later, and reminds him that Jones had a somewhat similar accident and was dead within a year. (It is immaterial from their point of view that Jones died of influenza and pneumonia.) His wife is a plucky woman and sympathetic, also much incensed against the employers because of the neglect to supply sufficient labour for the job. She makes him comfortable at home, in spite of shortened means. His injury is really slight, and after going to the hospital or his doctor twice a week, for two or three weeks, there is no physical disablement. But the seeds which were planted have grown, and will continue to grow, with the result that you soon have a condition of anxiety neurosis in full bloom. If the doctor said he had had a very narrow squeak, it is obvious that he must have been very seriously injured, and he could not be well in a month. Even if he appeared well there was always the possibility that something else would develop. Did it not in the case of Jones? It must be remembered that to the lay mind trauma is still the most important and universal ætiological factor in medicine, just as it was in medical text-books 50 years ago. A pain here or a pain there is sufficient to keep him on the alert for complications and sequelæ. Fear and anxiety keep him awake at night, and so the vicious circle is formed. Beneath the surface all the time is the knowledge that his employer was responsible for making him ill, and is still responsible for getting him well. Yes, he will go into hospital for treatment, but under protest. He will come out of the hospital worse than he went in, and more convinced thereby that the injury he received was far more serious than other people, particularly the insurance officers, realised. Weeks, months, and, perhaps, a year or two pass by. He has either become incurable or is tempted by a lump sum of money in full compensation of all his claims. Accepting this, he has, unwittingly, resumed responsibility for his health, and sooner or later health is restored to him.

The case of Mr. Robinson, however, is rather different. He was in a train returning from business when a collision occurred. He was thrown across the carriage and considerably bruised, and not a little frightened. What with his bruises and fright he had several restless nights, in the course of which he explained to his wife the dastardly neglect of the railway company in allowing an hour to elapse between the collision and his being conveyed to a place of safety. This indignation grows as his bruises and fright disappear. He feels disinclined to return to business, and his doctor has hinted that two or three weeks at the seaside in order to get over the "shock" are advisable. After all the company must pay for this, and it is a long time since he had a good holiday. On his return he is not yet inclined to work, and, meanwhile, the question of how much compensation is due to him has become, and is still, a matter of dispute between his and the company's lawyers. He is given to understand that he is suffering from traumatic neurasthenia, and it is impossible to say when anyone may recover from that disease. Anyhow, the company is responsible not only for the disease, but for financing him until he is well. Litigation threatens, further medical examinations ensue,

a sum is offered; shall he accept it? More sleepless nights, and the picture of anxiety neurosis, complicated by the sense of injury, is complete.

Now let us look for a moment at the other side. A hunting man sustains a severe concussion as the result of a fall. His doctor tells him he was within an inch of breaking his neck. He has nobody but himself or his horse to blame, and accepts the medical dictum in the spirit that a miss is as good as a mile. After a few days' rest he is feeling so much better that he wants to know when he may get up, and how long it will be before he can hunt again. Provided he is kept long enough at rest there will be no neurasthenia. If, on the other hand, he is up too soon, headaches will develop, and he will find he is very easily tired and quite unable to concentrate. A further period of rest would get rid of these symptoms, but neglect of such precautions would probably mean the establishment of a neurasthenic state from which recovery may be slow.

THE SEEDS OF NEURASTHENIA.

Before turning to other aspects of my subject, let me consider briefly one or two of the seeds of neurasthenia to which I have referred. I purposely brought in the doctor as a seed, because I am convinced that care in talking to patients who have sustained injuries is of the utmost importance from a psychological point of view. Such patients are in a very suggestible condition, and the most trivial remarks of the doctor in attendance are apt to produce lasting impressions. Of this I have had many illustrations, brought out by conversations with neurasthenic patients. My reference to the wife originates from the observation of insurance doctors, as well as from my own. It is rare to find a traumatic neurasthenia persisting for any length of time unless the woman responsible, be it wife or mother, is above the average in her ability to maintain a comfortable home.

Nothing, perhaps, stands out more prominently than the sense of injury if you indulge in conversation with patients suffering from traumatic neurasthenia. There can be little doubt that it is a psychological factor of much importance in promoting and maintaining the patient's ill-health. It is a vague, intangible disease of the mind, almost a psychic cancer, difficult to eradicate, and calculated to block all recuperative processes. It forms one of the chief obstacles in the path of treatment. There is a wrong to be righted, and until that has been done to the satisfaction of the wronged the latter is not likely to turn his attention away from his injury to the ordinary affairs of life.

ITS PREVENTION.

But having given due prominence to the difficulties of treating and curing a patient with traumatic neurasthenia, let me point out that much may be done to prevent it. It is not a condition found immediately after an injury; it only exhibits its first symptoms as the bruises are disappearing, and very often at a still later period. But it sprouts and grows under the doctor's nose, and if he is quick to detect the noxious weed and alive to the dangers associated with its growth he may successfully nip it in the bud. This, no doubt, is often done by practitioners who are in the habit of studying their patients' minds as well as their bodies, but in many instances the former are neglected. The incipient signs and symptoms may, perhaps, be noted but regarded as outside the sphere of medical attention and as the natural sequence of an injury, attributed to that vague factor "shock." A little clear thinking should make one realise that the effects of shock are most manifest immediately after injury, and tend to disappear slowly or quickly as the case may be. On the other hand, the nervous symptoms which we are discussing make their appearance later and progressively increase as time goes on. A little psychotherapy applied early in these cases would be far more valuable than lint and bandages. As in all spheres of medicine, early diagnosis and appropriate treatment is the secret of success.

TWO SCHOOLS OF THOUGHT.

At the beginning of my paper I expressed my belief that the disrepute into which medical evidence on cases of traumatic neurasthenia has fallen was occasioned by the absence of a clear conception of the pathology of that condition. There appear to be two schools of thought. The one favours the view that an injury of any degree of severity and inflicted at any site may produce a physical condition of the nervous system, with characteristic signs but without any morbid anatomy, to which the name traumatic neurasthenia is fairly applicable. The other view, and I submit the true one, is that the signs and symptoms of traumatic neurasthenia are those of an anxiety neurosis, complicated by certain factors to which I have drawn attention, and that it should be regarded as an emotional state, dependent not on any physical disturbance caused by trauma, but on a number of psychological factors. Although the knowledge that an injury has been sustained exerts a powerful influence in the development of neurasthenia, the latter is not the result of trauma. Furthermore, it must be recognised that the power of the influence exerted by the knowledge that an injury has been sustained would be very small unless it were accompanied by the ability to shift the responsibility for the injury and its effects on to other shoulders. It is quite true that there are many physical manifestations present in all severe cases of neurasthenia, and that they may truly be regarded as disabling, but our knowledge of the physical manifestations of the emotions enables one to recognise those of traumatic neurasthenia as those of chronic fear. After all, what is anxiety but chronic fear?

As medical men we are not in any way bound to go further than this. The final decision as to whether a condition such as I have described is to be legally regarded as the result, direct or indirect, of injury must rest with judges who interpret the law of the land.

LEGAL PROBLEMS.

At the present time, according to the letter I have already quoted to you, the courts recognise two conditions, one of which is a mental state characterised by brooding, weakness of will, and fixed ideas, and the other "traumatic neurasthenia" which, having a name, is in no need of further definition. A name is so satisfactory even when it means nothing; it becomes part of the established order of things and discourages all curiosity or investigation. The irony of the present position is that if you suffer from a certain kind of mental disorder following an injury, and it is called traumatic neurasthenia, you are entitled to compensation; but if the judge prefers to describe the identical condition in other language, then you must forfeit your claim. That legal judgment should continue indefinitely to be based on such a confusion of ideas seems hardly possible, but it is difficult to see how reform is to be brought about unless the medical profession becomes united in its opinion as to the meaning of traumatic neurasthenia, and each individual member of it is able to supply an intelligible interpretation of that meaning. What is a judge to do if medical witnesses on one side say that a man is suffering from brooding, fixed and erroneous ideas, and on the other side that he is suffering from traumatic neurasthenia.

The judicial mind is bound to regard the latter diagnosis as that of some dire disease, of which the name is sufficient to indicate its origin from physical injury. He can have no choice, under existing laws, to do anything but continue compensation so long as this, perhaps interminable, disease persists. On the other hand, he can decide that the patient is not suffering from physical disablement, but is brooding and harbouring fixed and erroneous ideas, a decision which enables him to stop compensation. What a quibble! Would not the following judgment cover both cases? I find that Mr. Smith is no longer prevented from working by reason of any injury he may have sustained as the result of the accident, but

that he is suffering from an emotional disorder which has its origin in anxiety and other psychological factors. But such a judgment would not necessarily bring the judge's difficulties to an end. Sooner or later it will have to be decided whether compensation can be claimed for a disorder of the mind, call it either neurasthenia or anxiety neurosis, following an injury for which another person or body is responsible, but not resulting from that injury. This question has already, I believe, been a potent source of trouble to the legislators of other countries, and is one which sooner or later must be faced here. It is a question full of snares in which justice and mercy may easily be entangled. The mind of the general public is as yet quite incapable of realising that a condition of ill-health and disablement can be the result of psychological influences alone, and a decision that compensation could not be recovered for neurasthenia following an accident might be the subject of an outcry. On the other hand, a contrary decision constitutes a direct appeal for the development and maintenance of neurasthenia whenever the responsibility for trauma can be foisted on the shoulders of others, and especially when a sense of injury has, rightly or wrongly, been acquired.

These legal problems, however, are not for us to solve. Our duties lie in a different and even more important direction. If we are convinced that traumatic neurasthenia, or "anxiety neurosis following trauma," as I should prefer to call it, is a mental disorder recognisable in its infancy, it is our duty to prevent its development. We must be on the look-out for the earliest symptoms, just as we look out for a rash in a person who has been exposed to measles, and we must be prepared to fight them without delay. We must realise that they are the advance guard of an insidious disorder capable of producing far-reaching results and distressing disablement, and we must be ready to give them battle on their own ground and at the earliest opportunity. Our weapons must not be merely the advice to take plenty of exercise in the fresh air, and a bottle of medicine repeated week after week, but a free expenditure of time devoted to fathoming the contents of the patient's mind, and an honest endeavour to re-establish a healthy mental outlook. Bring the anxieties and fears and misunderstandings to the surface, expose their fallacies, and disperse the germs of revenge and greed.

It is impossible to encourage and reassure successfully an anxious and perplexed patient until you not only understand his fears and difficulties, but have convinced him that you have thoroughly mastered them.

DIAGNOSIS AFTER HEAD INJURIES.

Before concluding, may I say a few words in regard to diagnosis in the case of patients who have suffered head injuries? I refer to patients who have had more or less severe concussion, and who complain of subsequent headaches and mental disabilities in the form of defective concentration, defective memory, depression, fatigue, and so on without any physical signs of disease. It is convenient to approach such cases with the idea of discriminating between three different conditions, each of which has characteristic symptoms and appropriate treatment. I have already referred to the first group to which might be given the name of true traumatic neurasthenia. A member of this group has had a definite head injury with concussion, the severity of which may be roughly measured by the length of retrograde amnesia. He has been kept at rest in bed for an inadequate length of time, and after getting about suffers from headache of the neurasthenic type—that is to say, more or less continuous and described as pressure on the vertex, or as a tight band round the temples. He is easily tired and cannot concentrate, thinks his mind is becoming defective, becomes depressed and anxious, and finally presents the characteristics of a neurasthenic patient. Such cases can be prevented from developing if sufficient rest is prescribed for patients who suffer concussion. They can be readily cured with rest and reassurance provided the responsibility is their own. The second may be described as the "contusion" group. In this case the patient recovers from the effects of his head injury in all respects except one. He finds that every attempt at physical exertion gives him a severe headache which is paroxysmal, not continuous, and more or less exactly localised over the site of injury. This site becomes tender when the pain is present, and sometimes when it is absent. An X ray examination may or may not reveal a bony injury. Not a few of such cases can only be relieved by surgical intervention, and when the skull is opened there is usually found some localised thickening of the meninges, and perhaps a collection of fluid in the subarachnoid space shut off from surrounding healthy parts by adhesions. At the site of bruising the brain has become anchored to the dura mater. The third group comprises the cases of anxiety neurosis following trauma, to which I have already devoted much of your time this evening, and which, as I have pointed out, are able to shift responsibility away from themselves. Their prevention and cure must depend largely on psychotherapeutic measures.

CONCLUSION.

In conclusion, I do not for one moment expect that the views I have expressed will be unanimously accepted. I shall be satisfied if I have provided some food for thought, and if I have established the case with which I opened in regard to the need for some clear thinking on the subject of "traumatic neurasthenia."

SYPHILIS AS A COMPLICATION OF TUBERCULOSIS.

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NUMEROUS inquiries have been made as to the incidence of a positive Wassermann reaction (W.R.) among the inmates of institutions specially concerned with the treatment of tuberculosis. The scheme of the present contribution is briefly to summarise the findings of various observers, and to analyse the results of blood examination for the W.R. in 500 patients resident in the City of Glasgow Sanatorium, Robroyston, which, in regard to number of beds—548*—is the largest institution of the kind in Great Britain. These examinations were carried out during the year 1922 as a routine measure on admission of the patients through the tuberculosis dispensaries of the city, the patients being both pulmonary and non-pulmonary and in no sense selected. The effects of antisyphilitic treatment in certain of the cases reacting positively were also ascertained and will be referred to in the last section of the paper.

The general details of the tests carried out are as follows:—

A. Subjects of pulmonary disease:—

No. of sera tested	223
No. of positive reactions	21

Approximate percentage of positive reactions, 9·42.

B. Subjects of non-pulmonary disease:—

No. of sera tested	277
No. of positive reactions	14

Approximate percentage of positive reactions, 5·05.

Previous Recorded Tests.

It has been taught generally that syphilitics are particularly susceptible to infection by the tubercle bacillus, and in 1914 Bronfenbrenner[1] published the results of an investigation into the frequency of tuberculosis in syphilitic subjects. Two tests were carried out. First, by means of Besredka's T.B.

* Including 100 beds for convalescent patients in the Auxiliary Hospital, Robroyston.

antigen he examined the sera of 193 syphilitics. Eighty-three cases, or 43 per cent., were found to give a positive reaction for tuberculosis. Of these, 55 exhibited clinical signs of tuberculosis, while in the remaining 28 the latter condition had gone unrecognised. Secondly, for comparative purposes he examined 432 non-syphilitics—or, to be more precise, individuals who gave a negative W.R. Of this series, only 100 persons, or 23·15 per cent., gave a positive reaction for tuberculosis. Bronfenbrenner thus concluded that tuberculosis was indeed peculiarly liable to become implanted on a luetic soil.

Tedeschi[2] claims that 70 per cent. of the cases of tuberculosis developing during a period of ten years of his prison service occurred in subjects of syphilis. Such a statement, while giving confirmation to the view that syphilis increases the susceptibility of an individual to tuberculosis, cannot be held as applicable to the general population, for Tedeschi dealt with a special type of patient living under conditions which may be presumed to have favoured a tuberculous invasion. Letulle[3] has recorded that 19 per cent. of 346 tuberculous patients in Bouciecaut Hospital gave a positive W.R. Recently, Munro[4] gave the following analysis of 100 cases investigated at the Fife and Kinross Joint Sanatorium:—

> Number of positive reactions 22, of which 6 (a remarkably high figure) were believed to be syphilis of the lungs; 11 gave both Wassermann positive and sputum T.B. positive; 3 were considered to be tuberculosis with W.R. positive and sputum T.B. negative; and in the remaining 2 the W.R. reaction was positive and the diagnosis other than tuberculosis. Leaving out of account the 6 cases diagnosed on clinical grounds as syphilis of the lungs, there remain 14 per cent. of patients suffering from tuberculosis and giving a positive W.R.

These investigations thus fall into two groups—namely, (*a*) those of Bronfenbrenner and Tedeschi, and (*b*) those of Letulle and Munro. In the former case the question was gone into from the point of view of tuberculosis as a complication of syphilis; in the latter, as in the present inquiry, syphilis was looked for as a complication of tuberculosis. For reasons already stated, Tedeschi's figures should be excluded from this discussion. Bronfenbrenner's results, however, may be said to stand as positive evidence for the view that a tuberculous invasion is specially favoured by a syphilitic soil. It is extremely difficult to estimate with any accuracy the precise incidence of syphilis among the civil population of this country; but there appear to be grounds for placing its frequency at between 8 and 10 per cent.† Granting that this proportion is approximately correct, one would anticipate that, if Bronfenbrenner's findings were universally applicable, the proportion of luetic patients among those examined for the present review would be definitely higher than the 10 per cent. or thereabouts found among the general population. The facts do not confirm any such anticipation. If for the moment the 500 cases be grouped together into one unit, it is seen that only 35, or 7 per cent., gave a positive W.R. This figure varies widely from what the work of Bronfenbrenner would lead one to expect; and the percentage is also strikingly low when compared with the results of Letulle and Munro, those of the latter being at least double 7 per cent.—*at least* double, because, in view of the work of Sir William Osler,[5] Sir James Kingston Fowler,[6] and others, it seems to be unlikely that in a series of 100 cases six of pulmonary syphilis should occur. Further, out of the 277 non-pulmonary patients examined—the great majority of whom were children—only 14, or 5·05 per cent., were found to be syphilitic, the lues in these instances being congenital with two possible exceptions.

It is not suggested that those figures show syphilis to be of less importance in its relationship to tuberculosis than is generally held. It is, however, not unreasonable to suggest that the coexistence of the two diseases may be less common than is frequently stated, and that syphilis may not directly predispose to tuberculous infection. This view is partly supported, among others, by Elliott[7] and Lyons.[8] The latter examined 471 cases of tuberculosis and found that 6 per cent. gave a positive W.R. The former, in commenting upon work done in the hospital of the University of Michigan, states that "3 to 5 per cent. of our syphilitics have shown evidence of Koch infection." Elliott, however, amplifies his remark by adding that "this low percentage may be explained by the fact that a very large portion of our cases of syphilis are seen in the primary or early secondary stages of the disease. We have found tuberculosis to be more commonly associated with the older syphilitic lesions." This last sentence expressed what would naturally be expected—that the older syphilitic lesions are those most likely to be associated with tuberculosis—since there is nothing to suggest that syphilis is more easily acquired by tuberculous than by normal individuals; but the results of the Robroyston series of cases, the positives among which were all either late or congenital, give no indication that there is any very peculiar susceptibility of syphilitic subjects to tuberculosis.

The question arises: Is it not highly possible that among the 500 cases examined there occurred a number of luetic individuals in whom syphilis was unrecognised both clinically and by the W.R.? Cobbett[9] is of opinion that the reaction may be trusted to give as true a verdict as any of the other modern diagnostic tests; and Sequeira gives the following results of blood examination in patients whose clinical signs pointed to a syphilitic infection:—

Stage.	Positive reaction.
Primary	90
Secondary	99
Tertiary	95
Congenital	100

These figures are substantially similar to those arrived at by other workers, and it may be taken that for practical purposes the W.R. carefully performed can be relied upon, at least in this country, where yaws and leprosy are practically unknown, to give sufficiently accurate knowledge of the prevalence of syphilis in a series of individuals whose blood is subjected to examination. As a matter of fact, in the present inquiry the number of patients in whom either history or certain physical signs were suggestive of syphilis, and in whom the W.R. was negative, was so small as to make no appreciable alteration in the percentages obtained. It may be reiterated, then, that no evidence can be submitted in this paper in support of the view that tuberculosis has a higher incidence among the syphilitic than among the non-syphilitic population.

Mistaken Diagnosis of Tuberculosis.

In respect of the present series the further question now arises: In how many instances did the primary diagnosis of uncomplicated tuberculosis break down on investigation and give place to one of pure syphilis? Pulmonary and non-pulmonary cases may be considered separately. Practically all observers are agreed that syphilis of the lungs, difficulties of recognition notwithstanding, is rarely found with certainty either clinically or in the post-mortem room. The following extract illustrates the generally prevailing view.[6]

> Kingston Fowler, after a careful inspection of the museums of the London hospitals . . . was unable to find more than 12 specimens which are believed to illustrate syphilis of the lungs, and of these he excluded 2 as very doubtful specimens . . . On referring back to clinical notes of 1323 male patients suffering from various diseases, none of them hospital cases, and of the age of 20 and upwards, 53 cases presented a definite history of syphilis. Out of this number there were 5 cases of lung syphilis . . . On the other hand, out of the same series of cases there were 320 cases of pulmonary tuberculosis, in which only in 3, or less than 1 per cent., was a syphilitic history apparent.

In contradistinction to the above, Munro's investigation led him to the conclusion that 6 out of his 100

† Vide Final Report of Royal Commission on Venereal Diseases, 1916.

cases were clinically syphilis of the lungs. As detailed above, out of 223 pulmonary patients examined at Robroyston, 21, or under 10 per cent., reacted positively. In 10 of these cases syphilis was suspected, either from history or from physical signs; in 11 syphilis was unsuspected. At some time or other while the cases were under observation, either before or during the course of antispecific medication (see below), evidence of tuberculosis, in the form of *B. tuberculosis* in the sputum, was found in all 10 suspected cases and in 9 of the unsuspected cases. Of the remaining two, one, a married woman of 38, refused to remain in hospital. No tubercle bacilli were found during her brief residence and she received no antisyphilitic treatment. The other, an unmarried man of 37, exhibited clinical signs compatible in every way with chronic pulmonary tuberculosis, but no bacilli were ever demonstrated. After a full course of neokharsivan, combined with mercury and iodides, the improvement in his whole condition was so striking as to leave no doubt that a diagnosis of pulmonary syphilis should be substituted for pulmonary tuberculosis. Neglecting the case of the woman referred to above, whose case was almost wholly uninvestigated, this was the only instance in which such a decision could be come to; and the incidence of syphilis of the lungs in the cases under review may thus be placed at something below 0·5 per cent.

The non-pulmonary cases are of less interest as regards mistaken diagnosis. Of the 14 cases giving positive reactions, 8 were suspected and 6 unsuspected, suspicion being based upon more or less obvious stigmata. In three instances—two suspected and one unsuspected—the diagnosis of tuberculosis broke down, and that of syphilis was confirmed by the results of treatment. In the others, the two diseases were found to coexist, the latter conclusion being dependent on clinical and X ray examination and on the results of treatment.

Results of Treatment.

If the question of the frequency with which syphilis and tuberculosis are associated in the same individual has been productive of conflicting views, the subject of antisyphilitic treatment in tuberculous patients appears to have led to still greater confusion. On the one hand, certain observers have claimed that very material improvement has followed the exhibition of 606 and its analogues, while others condemn antisyphilitic treatment, arsenical or otherwise, in cases where tuberculosis is known to exist. Disasters in past days have doubtless resulted from intensive mercurial treatment in certain tuberculous cases, and the effects of salvarsan in tuberculosis require the fullest consideration. It is impossible in this contribution to do more than indicate the results obtained during treatment of the present series of cases, and to correlate them with the work of others.

In the first place, the possibility of the one disease exerting a modifying influence upon the other must be borne in mind. That such an influence may exist is recognised. Thus Bonney[10] records the case of a young man with well-developed pulmonary tuberculosis which was quite resistant of treatment until, after the patient's dismissal from a sanatorium, he contracted syphilis and ultimately did well. What therapeutic methods were employed, and whether the outcome may be partially explained by a mutually antagonistic action of the two diseases, are points which are not clear; but that such an action may exist appears to gain in possibility from a detailed review of a number of the cases of the present series. Space is not available for such a review, but a few general indications may be given. Among the pulmonary patients, for example, were four in whom the physical signs suggested very chronic disease of tuberculous origin, but in whom tuberculosis could not be diagnosed with any certainty until, during the course of antisyphilitic treatment, the matter was cleared up by the appearance of tubercle bacilli in the sputum. This demonstration of bacilli for the first time occurred simultaneously with reactivation of varying degree of the disease in the lungs, as evidenced by general and, apparently, focal reactions. A summary of two illustrative cases is given below:—

CASE 1.—Female, aged 29, unmarried; notified T.B. and admitted June 28th, 1921. General condition fairly good, weight 7 st. ½ lb.; slight cough, sputum in very small amount, no tubercle bacilli, physical signs limited to left upper lobe and suggestive of very chronic disease. Syphilis unsuspected until W.R. was found to be positive in November, 1921. Treatment was general up till this point; patient in good condition, weight 8 st. 7 lb.; cough and sputum absent; physical signs practically nil. Commencing on Nov. 22nd, 0·15, 0·3, and 0·45 g. neokharsivan were given intramuscularly in creocamph at weekly intervals. Severe general reaction—headache, sickness, elevation of temperature—followed each dose. In middle of December cough and sputum reappeared and temperature became intermittent, the evening rise becoming gradually and progressively higher. Physical signs became much more marked and many moist râles appeared. Soon it became obvious that aggressive disease had set in, with rapid and widespread infiltration of the left lung and extension to the right. Tubercle bacilli were next found in the sputum in large numbers, and the diagnosis of tuberculosis was confirmed. In April, 1922, patient was transferred to another institution, where she died in the following June.

CASE 2.—Male, aged 51, married; notified T.B. April 6th, 1916; admitted June 28th, 1921. Chronic disease of at least 10 years' standing; general condition poor; very little sputum, in which no tubercle bacilli could be found by any method. Syphilis was suspected from the history, and the W.R. was found to be positive. Two full courses of novarsenobillon were given, each dose being followed by a general reaction, which was at first very slight but which became more marked in time. "Much pain at the top of the right lung" was frequently complained of after the injections—this probably indicating a focal reaction. During the second course of treatment tubercle bacilli appeared for the first time in the sputum, and the patient ultimately left the hospital of his own accord, depressed at being less well than on admission.

Arsenical treatment was given altogether in 17 of the pulmonary cases. In one, its administration permitted of a diagnosis of lung syphilis being substituted for one of tuberculosis; in four, treatment resulted in a certain diagnosis of tuberculosis where doubt had existed previously. There remain 12 cases which were frankly tuberculous from the outset. In seven of these, aggravation of the symptoms occurred either during or after treatment, each case showing definite focal and general reactions—increased temperature, aggravated cough, more abundant sputum, pain in chest, sometimes headache and sickness—after the injections, which in none of these cases were persisted with for more than six weekly doses. Any syphilitic stigmata present cleared up rapidly, but the satisfaction engendered by this was more than discounted by grave and rapid changes in the lungs. Five cases remain to be mentioned. All of these were apparently unaffected by the drug, and there was a striking absence of reaction after the injections. In no case did any special improvement occur, although the patients were living under sanatorium conditions.

As regards the non-pulmonary cases, 12 of the 14 positives were treated. In three of them a primary diagnosis of tuberculosis was upset and gave place to one of syphilis (one skin case, exactly simulating widespread multiple lupus, and two cases of knee-joint disease); in five, no influence of any kind appeared to be exerted by the drug; and in the remaining five there was distinct and progressive aggravation of symptoms and signs. These last cases showed focal reactions after the injections. Where obvious syphilitic lesions were present, treatment was followed by their reduction or disappearance. An illustrative case may be briefly quoted.

CASE 3.—Male, aged 2, notified multiple T.B. May 13th, 1922; admitted Sept. 6th, 1922. On examination child was extremely emaciated and pale; temperature showed slight variations from normal; physical signs, which suggested syphilis, were as follows: Tibial node; swelling over right parietal bone, slightly fluctuant; hard glandular swelling below mandible; swelling over third and fourth right metacarpals. Small doses of mercury and potassium iodide were commenced, and three weekly doses (2, 4, and 6 cg.) of

sulfarsenol were given subcutaneously. The injections were followed by restlessness and heightened temperature and only three were given, the other drugs being continued. On Nov. 20th the general appearance was much improved and the cranial and tibial nodes had practically disappeared, but the metacarpal and submandibular disease had progressed rapidly. Both lesions had broken down and were discharging, in spite of repeated aspirations, giving rise to typical tuberculous sinus formation and ulceration, followed by a mixed infection. A fresh glandular swelling had developed in the neck and was softening, and the temperature was widely intermittent and at times remittent. There was now no question that the child was suffering from combined tuberculosis and syphilis.

This case provides a good illustration of what has been referred to as the possible mutual antagonism of the two conditions. According to the statements of the child's parents, all the swellings had remained practically unchanged during the four months which intervened between the date of notification as tuberculosis and the commencement of antispecific treatment; but after eight weeks of the latter, and although the syphilitic lesions had disappeared and the child's appearance was distinctly better, active tuberculous processes were in progress where inactivity had existed before. Necrosed metacarpal bones had to be removed shortly afterwards and the temperature record had become disquieting. A precisely similar sequence of events was seen in a girl of 14 with unilateral knee-joint disease, undoubtedly tuberculous, and with stigmata of congenital syphilis in the form of Hutchinson teeth and a saddle-shaped nose. The disease in the knee-joint appeared long to have been quiescent before the commencement of antisyphilitic treatment, but neokharsivan injections were followed by focal reactions, swelling, softening, and finally breaking down of joint with involvement of the skin and sinus formation. Repeated occurrences of this kind make it difficult to escape from the suggestion that in some cases at least—and perhaps most of all those in which a more or less latent spirochætal infection is present—a syphilitic affection may react favourably on a coexisting tuberculous one, and that the removal or modification of the former by antispecific measures may lead to, or favour, an activation of the tuberculosis. It is impossible, in the absence of histo-pathological data and of any certainty as to the physiological processes initiated by 606, to do more than suggest possible explanations of the phenomena so frequently found to occur, but such suggestions may be of value in so far as they form a basis for future investigation. The direct action on the tissues of the drugs concerned, or the physiological reaction precipitated by their administration, may be responsible factors; but it seems more probable that the true explanation may be found in the condition of the tissues which are exposed to the action, chemical or physiological, of the drugs. It has been found—e.g., in glandular disease—that syphilitic and tuberculous tissues may be intimately intermingled, and it may be that general and focal reactions, and subsequent aggravation of the tuberculosis, are to be explained by the resolution of syphilitic tissue immediately adjacent to tuberculous tissue, the vascular and fixed tissue reactions which occur permitting of ready extension and aggression on the part of the tuberculosis. Absence of reaction might therefore be due either to an entire dissociation of syphilitic and tuberculous tissues, the latter being quite unaffected, or to the existence of a densely fibrotic condition on which no drug can be expected to exert any influence whatever. It would therefore follow that, while syphilis of the lungs as an isolated disease is extremely rare, pulmonary syphilis and pulmonary tuberculosis might be associated in the same patient much more commonly. The reaction following salvarsan would then depend on the condition of the tissues. Should the syphilitic lesion be entirely fibrotic, 606 would lead to little if any focal reaction, and no stimulation of the tuberculosis into greater activity would occur; whereas, if definite absorptive processes followed the injection of the drug, tubercle bacilli might be liberated in great numbers and thus precipitate a serious and even rapidly fatal extension of the tuberculosis.

It is to be emphasised that at Robroyston there was seen in no case anything like the striking improvements recorded by certain writers. For example, Hartley[11] treated with salvarsan 16 patients suffering from pulmonary tuberculosis, and states that in these pyrexia, which had previously resisted all therapeutic measures, yielded rapidly to the drug. This experience is directly at variance with that of the present series of cases, in which pyrexia tended to appear or to increase after the injections were given, and this resulted no matter whether neokharsivan, novarsenobillon, or sulfarsenol was used. The mode of administration appeared to have no influence whatever. Case 1, for instance, was treated intramuscularly by neokharsivan in creocamph, Case 2 by N.A.B. intravenously, and Case 3 by sulfarsenol subcutaneously.

Stopford Taylor[12] describes two cases of lupus—the first consisting of multiple ulcers of the right arm and the other of ulcerating lupus of the face—which responded beautifully to neokharsivan injections. In the first the result was "nothing short of marvellous," which would seem to point to the lesions having been syphilitic in origin, while in the second a speedy change for the better took place after three injections. There is little doubt that distinct focal reactions in tuberculous lesions take place after the injection of organic arsenic, and it is conceivable that, as is the case in tuberculin treatment, the focal reaction may be productive of some good in cases where the lesion is on a free surface, such as the skin, where it can be carefully watched; but too little is known of such reactions, and they have been treacherous too often, to permit of their general application.

In 1911 Herxheimer and Altmann[13] reported a series of cases the results in which receive confirmation from those of the present series. Their cases all showed the same reaction—i.e., any obvious luetic lesions which were present healed under salvarsan therapy, while latent tuberculosis flared up. Wechelmann[14] collected from the literature ten cases of associated syphilis and tuberculosis treated by salvarsan, in all of which death occurred and was attributed by Wechelmann to the exhibition of the drug. Elliott[7] describes 12 cases, supposedly tuberculous, in which various preparations of organic arsenic were administered. In eight of these the result was unsatisfactory; the ninth, lupus involving the chin and the left hand, showed a very marked focal reaction after the injections, but does not appear to have been followed up. The remaining three responded beautifully to the treatment, the general condition showing a marked and rapid improvement and the physical signs clearing up. The diagnosis in these cases was consequently changed to syphilis.

Conclusions.

1. From a consideration of limited data the incidence of a positive W.R. has not been found to be more frequent among the tuberculous than among the general population.

2. Syphilis of the lungs existing as an isolated disease is extremely rare, but it may be that a number of cases recognised as pulmonary tuberculosis and in which the W.R. is positive are in reality cases of combined syphilis and tuberculosis of the lungs.

3. The two diseases when coexistent in the same individual may modify each other.

4. In cases in which syphilis and tuberculosis are present in the same individual, the administration of 606 and its analogues may be followed by disaster. If organic arsenic is used, it should be administered in extremely small doses and at wide intervals. If no disturbance follows the injections, treatment may be continued cautiously, but it should be at least temporarily suspended if focal or general reactions occur and the condition carefully watched.

5. Organic arsenic compounds may be useful in cases in which the diagnosis is doubtful, but it is

unjustifiable to employ them for diagnostic purposes save with extreme care, and always having in mind the possibility of a tuberculous flare up.

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INTRACRANIAL BIRTH INJURIES.[1]

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IN attempting to deal with the after-history of such infants as survive, let me say that I fully appreciate the difficulties with which I am surrounded. On one side lies all that careful work carried out by our obstetric colleagues, beginning with the exhaustive and patient investigations of Dr. Herbert Spencer, the record of which is tucked away so securely in an old volume of the Obstetrical Transactions that some of us seem to have a difficulty in finding the reference, and ending with the important work which has just been recorded. In other countries, and especially in Germany and the United States, the output of work has been even greater, all of it going to show the frequency of intracranial hæmorrhage in infants born dead or moribund.

Ætiology: Conflicting Views.

The belief that infants surviving this kind of trauma at birth lived to form some part of the total of cases of cerebral diplegia has, in the past, been very generally held. Such was the view for which Little himself pleaded, and since his day it has received the support of Gowers, Osler, and many others. But upon the other side lies another series of researches to which equal attention must be paid. I do not think I am overstating the case if I say that at the present day neurological opinion is averse from the view that intracranial hæmorrhage at birth is responsible for any considerable part of the cerebral diplegia which presents itself in later childhood. Such, I think, was the view which Dr. J. Collier expressed the other day in his presidential address at the Neurological Section of the Royal Society of Medicine,[2] and he there summarised the extensive literature which supports his own observations, that autopsies conducted upon children who have shown during life evidence of cerebral diplegia reveal a condition compatible only with the assumption that the cause was to be found in primary errors of development. The findings of obstetricians and neurologists are, to that extent, opposed and at first sight seem capable of being reconciled readily and completely by one assumption only, that all infants with intracranial hæmorrhage die at birth or in infancy, so that the neurologist whose post-mortem and histological examinations are carried out upon older children is confronted only with those in whom the diplegia is the result of encephalitis or due to developmental defect. Such a view has been advanced. One patient observer (Kowitz), as a result of the study of 6000 autopsies, maintains that the cases of meningeal hæmorrhage occurring at birth are gradually eliminated by death before the end of the third year of life.

If, therefore, I state at the outset that my work among infants and children makes it impossible for me to discard the belief that Little was right in his contention that there exists a certain group of cases of diplegia, recognisable by what he calls "considerable pathological resemblances in intellectual character and physiognomical expression," as well as by a degree of spastic rigidity, which owe their defect to intracranial hæmorrhage at birth, I am confronted at once with the difficulty of producing the necessary pathological proof. Only in one respect is the position changed since Little's day. It was to ask for the production of this pathological evidence that Little, whose interests were largely orthopædic, had himself introduced as a guest at a meeting of the Obstetric Society and gave that clear account of the disorder which he believed to be the result of asphyxia at birth. To-day an immense obstetric literature upon the subject, recently summarised with great clearness in an important work by Ehrenfest, provides in part the answer to Little's request. We now know not only the varieties of intracranial hæmorrhage which may be caused at birth, but we have a clear conception of the immediate symptoms which result in the first days of life.

Symptomatology of Intracranial Hæmorrhage.

The immediate symptoms of large subdural hæmatoma above or below the tentorium or in both situations are well known. In the tense bulging fontanelle there is clear evidence of increased intracranial tension. If pressure upon the fontanelle is made, respiratory distress, screaming, or even convulsions may follow. The cerebro-spinal fluid is often under greatly increased pressure and in most cases contains blood. If the examination is made a day or two after birth there may be evidence of altered blood, staining of the cerebro-spinal fluid, degenerated erythrocytes, &c. The ophthalmoscope has now entered the lying-in chamber, and it is said that 60 per cent. of the cases show retinal hæmorrhages and that œdema of the disc may appear. Inequality of the pupils, squinting, and nystagmus are common. The infants, as a rule, exhibit extreme restlessness and constant screaming, or there may be stupor and immobility. The increased tone of the muscles is very striking in most cases. There may be generalised rigidity with opisthotonos, trismus, clonic twitchings of individual muscles or groups of muscles, or generalised convulsions. If any part is stimulated with a slight flick, a characteristic violent twitch of the whole body results. But that which indicates most clearly the serious state is the impairment of the two reflexes vital to the child, the sucking reflex and the breathing reflex. The breathing may be slow and stertorous, or it may be rapid and shallow, or there may be ominous pauses in which the pulse continues to beat strongly. Some degree of asphyxia is the rule in all severe cases. Suction is not only poor and clumsy, as happens in many feeble, or premature, or excited, or mentally deficient infants, but the reflex is entirely absent. Pressure upon the dorsum of the tongue fails to produce the usual suction response.

I will not elaborate the picture further or describe the attempts which have been made to separate the symptomatology of supratentorial bleeding from that of infratentorial, or deal with the symptoms

[1] A contribution to a discussion held at the Medical Society of London on Dec. 10th, 1923.
[2] THE LANCET, 1923, ii., 1129.

of localising value by which it is hoped more and more to bring surgical help to our aid. My own experience at this stage is small, so small that you may wonder that I should adduce it. Still, small as it is it serves to illustrate the first of the reasons upon which I believe the uncertainty of our knowledge depends. The obstetrician deals only with the beginning, the neurologist only with the end. For the intervening period we must rely upon the general practitioner and the pædiatrician. I find that I have been asked to see in all eight infants who I thought were suffering from intracranial hæmorrhage. All of these infants died. All showed more or less completely the symptoms I have just described. In three I was able to verify the diagnosis post mortem. The other five were seen in private practice and no post mortem was obtainable. Now it is my experience, and I do not suppose that I am singular in this, that when I am called to see a new-born infant, it is generally because its condition has aroused the fear, if not the expectation, of immediate death. All of these infants were moribund. That there are others suffering similarly but less severely I cannot doubt. Their condition may not arouse the fear of immediate death, although there may be a vague anxiety felt. The mother may be made aware that the doctor or nurse does not think highly of the chance of ultimate survival, but no routine examination is made and the child's recovery is put to the test of time.

Skilled Routine Examination.

The need for a skilled routine examination of the new-born to detect evidence of the presence of intracranial hæmorrhage in any infant whose well-being is in the least in doubt appears to me to be the first and most important deduction to be made from the work which Mr. Eardley Holland has put before us. The certainty with which in general practice the minor degrees of such conditions as pyloric stenosis or scurvy are recognised to-day, and the rarity with which they were detected save in their most pronounced form 20 years ago, suggests the possibility that the attention of the profession has only to be aroused to bring to light many cases of slighter intracranial hæmorrhage. Further, it seems to me to follow that since intracranial hæmorrhage occurs especially in the premature and feeble child we must be careful in adducing the degree of prematurity or feebleness as itself a sufficient explanation of the failure to suck, or of asphyxia or of somnolence. Mere unripeness is in common experience compatible with a high degree of vitality. Death from prematurity or congenital feebleness may be due as often to trauma as to deficient development.

Lastly, in tracing back the history of those cases which we believe to be examples of Little's group of diplegia, it seems to me that it becomes of importance, now that we know the symptoms of intracranial hæmorrhage occurring at birth with some accuracy, to inquire specifically as to the presence of these symptoms. I see little that is to influence our judgment from inquiry as to the nature of the labour. We know that many are born after a difficult and protracted labour, that many are born after precipitate labour, and that many are born after a labour that is in no way abnormal. But a history of constant screaming or of stupor, of aphonia, of refusal to suck, of rigidity, of convulsions, of asphyxia, of facial or oculo-motor paresis or twitching seems to me to have more definite significance. It is clear that after a long interval symptoms which were not specially searched for at the time and which were since the infant survived of slight degree will often be forgotten. Of 63 cases which seemed to me to be examples of Little's syndrome the mother had retained a recollection of asphyxia in 27, of constant screaming in 7, stupor in 4, of aphonia in 3, of refusal to suck in 8. In many there had been anxiety as to survival for the first few days of life. These figures are suggestive. Nevertheless, the difficulties arising from the want of examination of the newly-born in general render such inquiries barren and uncertain.

A Typical Example.

To illustrate this let me recount the case of T. S., an example of the condition I believe to be typical of the after-effects of intracranial hæmorrhage at birth. He came under my care when 12 months old because his mother was distressed by his failure to grasp and to stand. He could sit up only with difficulty. When held upright he made attempts as though to walk, but the legs were then rigidly extended and the adductor spasm was extreme. The hands were stiff and clumsy. He could not pick up anything, but he had learned stiffly and incoördinately to bring his two hands into apposition and he took great and obvious delight in this manœuvre, This represents a stage which the normal child will often reach in the fifth month. The face was stiff, the smile reflex like that of a young infant, and he was a great dribbler. But what struck me most about him was the shape of the head. I do not know the mechanism or the precise significance, but a certain proportion of these babies in early infancy have a strikingly asymmetrical head. Extreme overlapping of one parietal bone over the other has often been noted at birth as indicative of intracranial hæmatoma or extensive tentorial tear resulting in undue mobility of brain. Seen later these children have heads which recall the shape of the Bass Rock. I have here a plaster cast of this child's head taken at a year old. At the present time the child is 2 years old and has made great progress. The head asymmetry is hardly noticeable. He can walk, though with the usual stiffness and rigidity, for a few steps. He still prefers to hold on to the furniture. The hands are still stiff and expressionless. He is bright and intelligent, says a few baby words, and is constantly practising consonant sounds.

Now this child, among the most typical of my cases, happened to be born in a hospital in London, and a few days ago, for the purpose of this discussion, I wrote and asked for two kinds of information. I asked for particulars of the labour and I asked for particulars of the child's condition during the first fortnight. Of the first I received, as I knew I should, the most detailed evidence; of the second, as I feared I should, little of value. The labour was conducted under morphine and hyoscine. In all four doses of hyoscine were given. The conjugate diameter of the mother's pelvis was contracted to four inches. The times of the various stages of labour were recorded with a note upon the condition of the pulse and of the urine passed during labour, &c. One gets the evidence of watchful and skilful conduct and control. But the notes on the child are unsatisfactory. It was born in a condition of blue asphyxia. The caput was very large and was "red and congested in appearance." The posterior parietal bone was depressed below the other. The child weighed 8 lb. 4 oz. Three days later its weight had fallen to 7 lb. 9 oz.

Now, although this child presented one of the classical signs of tentorial tear, no notes of its condition are hereafter available except for some statements as to the colour of its stool. In studying infants observations upon the colour of their stools are too apt to be proffered as a substitute for a routine physical examination. The mother of this child, which left the hospital on the twelfth day, brought the infant back on several occasions complaining of the ceaseless crying and absolute sleeplessness, which she connected in some way with the peculiar shape of the head. She was, however, always reassured. It is the study of cases such as this which makes it impossible for me to discard the belief that Little was right in his contention. I quote it because it shows well the difficulties at present of gaining information as to the state of the child at, or shortly after, birth. An examination of the cerebro-spinal fluid or with the ophthalmoscope would have afforded the crucial test.

The Latent Period Following on Recovery from the Immediate Symptoms.

The first of the difficulties, then, with which one has to contend, is the want of systematic examination of the new-born which makes it difficult to detect the occurrence of a hæmorrhage which, while compatible with life, may yet give rise to after-effects. The second difficulty is the long latent period which ensues before these after-effects are commonly appreciated. A consideration of the order in which the different parts of the brain are developed explains the length of the interval which must elapse between birth and the time when the child is taken to a doctor and complaint is made of failure to sit, to stand, to grasp, or to speak. Physiologically the brain of the new-born is active only in part. It is composed almost entirely of grey matter. The medullation of the nerve processes of the cells has not yet been accomplished. Only those processes are medullated which are of immediate and vital importance to the newly-born and which are necessary for the functions of respiration, suction, and circulation. On the other hand, the paths which render possible complicated and controlled motor action and equipoise of the body are not developed. It is the single task of the human infant during the first year of life to develop that marvellous precision and control of complex movement, and to refine more and more those tactile, muscular, and stereognostic senses which are given to man as they are given to no other creature, and to which he owes his survival and supremacy. In the success which attends the infant's strivings we find the earliest indications of his intellectual quality. Darwin's infant steadied his bottle with his right hand at the third month. Others in no way mentally defective are yet less quick to learn. The variation within the normal are great. Unless observation in the home is unusually skilled it may well be that a year or more has elapsed before the backwardness is appreciated. Examination may then show clear evidence of the delay in the assumption by the cortex of control over the voluntary movements. The spastic incoördinate movements may be those characteristic of the normal development at a much younger age. Only when the hæmorrhage has affected those vital medullary reflexes which are active from the first is the child brought sooner. In every instance in which I believe I have been able to recognise cerebral diplegia in the early months of life the child was brought not for spasticity of limbs, but for clumsiness or inability to suck, for aphonia, or for respiratory difficulties, such as stertor and dyspnœa. Such cases are not common and it is clear that apart from the high mortality which is likely to be the immediate result of medullary damage, their survival even to the end of the period of infancy is doubtful. In cases of Little's syndrome without evidence of medullary damage apprehension is often not felt until the beginning of the second year.

The Ultimate Effect upon the Child.

The name Little's disease is only properly applied to two groups of cases and to two only: first, to cases of paraplegic rigidity without mental defect and without convulsions, and secondly, and perhaps more strictly, to cases of general rigidity, usually without convulsions and without mental symptoms or with only that degree of backwardness which is accounted for by delay in that process of auto-education which proceeds by grasp and touch in every child.

Of the first group the paraplegic, which is by no means small and which especially appears to follow premature birth, it may be said at once that no question of mental defect arises. Walking is delayed and for a time their gait is spastic and defective, but of their ability there is commonly no doubt. Their treatment is generally orthopædic. I have elsewhere discussed the question as to whether or not Lord Byron's lameness was so caused. In more than one such case I think close observation in early infancy has shown me that the development of the hand movements was also slightly delayed. It is, however, only when the hand is rendered stiff, and immobile, and anæsthetic that an appreciable delay in the mental development of the child results. As Madame Montessori has so clearly shown, the chief part of infantile education proceeds by the development of the sensori motor paths. In all its efforts the infant must recapitulate the story of its race and gain control over the wonderful instrument, the human hand. In this process of auto-education the diplegic infant, with an antenna relatively immobile and insensitive, lags far behind the normal child. When in addition the face is stiff and immobile, when speech is long impossible, when the laugh and the cry are expressionless and not charged with emotion the simulation of gross idiocy or imbecility is close. Yet the children are not idiotic. Their backwardness is due to sense deprivation. In a sense their defect is the opposite of that encountered in children who are both blind and deaf. Their visual and auditory memories are good. Every avenue to the brain which was closed to Helen Keller or to Laura Bridgemann is open to them, but the single path by which so great a mental development was achieved in their case, that of touch, is here gravely obstructed. A close observation of these diplegic children will often afford convincing proof of the activity of the brain in spite of the expressionless face and immobile, helpless limbs. One of my little patients at the age of 3 could not speak, but he could hum tunes, and he made use of his gift of song to make his wants felt. Thus when he wanted his toy soldiers he hummed the tune of "Onward Christian Soldiers." He now often speaks of what happened to him "before I could talk." In early childhood his parents were told by several medical men that he was seriously mentally defective and would always remain so. He is now a schoolboy of more than average intelligence, gifted especially in mathematics, stiff and a little tremulous in his movements, a villainous writer, fond of games but very bad at them.

Degree of Mental Deficiency.

It is in general only in early childhood that the fears of gross mental defect are aroused. Later after a varying delay the cortical control over the voluntary movements is established more of less effectively and rapid progress is achieved, while education by means of ear and eye proceeds unchecked. In a few cases with microcephaly or with convulsions permanent immobility remains, but even in the worst the intelligence is always much greater than would appear from a cursory examination. In many the ultimate result compared with the initial backwardness in achieving voluntary control of movement is surprisingly good. Memory, artistic perception, æsthetic sense, imagination, and character may all be on a high plane. At the worst the personality is not debased as in primary mental defect. After all the idiot is known by what it does, these children only by what they cannot do. In general they have the saving grace that they try. The actions of the idiot are apt to be purposeless and inconclusive, the child with diplegia from birth trauma struggles and overcomes. Now I may be wrong, but I think that the material upon which most post-mortem neurological investigations have been made does not include such cases. Children so affected are seldom to be found among the inmates of institutions for mentally deficient children. They are to be found in the homes of the people, a little stiff and awkward in their movements, sensitive, retiring, self-conscious, a little odd to look at, and peculiar in temper. Most of the older children who have been brought to me have been under treatment by an orthopædic surgeon; few of them have been taken for advice as to their mental condition. It is characteristic, I think, that the name by which we know the condition commemorates the founder of the Orthopædic Hospital. Their gait may be faulty, those who know them well are in no doubt as to the acuteness of their reasoning powers. I suggest that the neurological studies of which I spoke and which are held to prove the negligible part which trauma

at birth plays in the causation of cerebral diplegia are concerned with material derived from very different sources.

The use of the term Little's disease has been extended unjustifiably to include all cases of diplegia, and in the past attempts have been made to trace the origin of gross mental deficiency with spasticity and epilepsy to intra-natal trauma. The failure of all such attempts must not deter us from the endeavour to trace far more clearly than is possible at present the after-history of infants who suffer intracranial hæmorrhage at birth and survive.

That this accident does not always produce permanent damage is certain. Cases in which hæmorrhage occurred have been followed for many years, and the children have thrived normally. That other types of disturbance may owe their origin to intracranial hæmorrhage is possible. That this particular type in which the sensori-motor defect is the only defect, or the predominant defect, does owe its origin to intracranial hæmorrhage seems to me certain.

Another Case.

I show as a typical example of extreme generalised rigidity from cerebral birth injury a boy aged 16. His birth was very difficult. His doctor tells me it was the most difficult forceps case he ever had. There was bilateral subconjunctival hæmorrhage. He was born asphyxiated and subsequent alarming asphyxial attacks recurred during the first week. He screamed incessantly. He was christened at once, in fear that he would not survive. He has been sent to a school for mentally deficient children. There he has learned very little. He can read about as well as a child of 7. His writing and his figures are almost illegible. What he has learned he has learned from his devoted mother. She is not an intellectual woman, and the intellectual development which I have seen in other boys similarly affected in intellectual homes has not been achieved. But he holds his own in the family life. He is affectionate, honourable, well-behaved, and his father and mother are devoted to him. This scholar from the school for mental defectives plays a first-rate hand of whist and he makes himself very useful in housework of all sorts and in cooking. He can control his stiff, awkward limbs in a wonderful way during certain practised actions. Versatility is not for him. But, like a juggler, by long effort he succeeds.

PELLAGRA IN THE BRITISH ISLANDS.

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THE rarity of pellagra in this country is not surprising considering the conditions which appear to favour its onset, but the disease is endemic in England, and isolated cases are noted from time to time. That more cases are not recorded must in part be due to the difficulty of diagnosis and to the superficial resemblance of this condition to other well-known physiological and pathological states. Even during epidemics of pellagra in other countries many cases would be overlooked were it not for the presence of so many typical cases at the same time; hence the problem for the medical man who has never seen a case before is much more difficult. A study of the literature suggests that many cases occur without being diagnosed. In 1913 great interest was taken in the disease, and many medical men in England reported cases in the more widely read journals. Before and since that date the records reveal merely isolated instances of the condition, and it is practically certain that in 1913 there were many cases simply because they were looked for and that the falling-off in the numbers since corresponds to the failing interest of medical practitioners. It is hoped that a brief summary of the cases occurring in this country may do something to re-awaken that interest without which, even in typical cases, a diagnosis is almost impossible.

In October, 1912—just 11 years ago—Sambon and Chalmers,[1] writing under the same title as the present, described the first cases in this country. It appears that Billod,[2] in 1860, received a letter from the Inspector-General of the Scottish Lunatic Asylums to the effect that he had seen two idiot brothers in an asylum in the east of Scotland, both showing manifestations of pellagra. These constitute the first cases in our literature. In 1866 Howden[3] described the disease in a woman in the Montrose Royal Asylum. No further cases are noted until 1906, when Cassels Brown[4] published a case in Rock Ferry, Cheshire. (From careful consideration of the appearances described I do not think that this was true pellagra.) The next record is in 1909, when Dods Brown and Cranston Low[5] diagnosed a typical female pellagrin in the Royal Edinburgh Asylum. So many cases, relatively, having appeared in Scotland it seemed to Sambon and Chalmers[1] that a trip to this part of the country might reveal yet more cases. Accordingly, in 1912, these workers proceeded north and, as had been anticipated, several more pellagrins were diagnosed.

The publication by Box[6] in 1913 of his two cases in brothers living in Slough seems to have stirred up the greatest interest in the disease, and this, together with the work of Sambon, gave rise to a flood, relatively speaking, of new cases. These can be best presented in tabular form.

TABLE I.—*Pellagra Cases in the British Islands in 1913.*

Author.	Locality.	No. of cases. M, male; F., female.
Box.[6]	Slough.	2 brothers.
Hammond.[7]	Isle of Wight.*	1 F.
Sambon.[8 9 10]	Lymington (New Forest).	1 M.
	Slough.	1 M.†
	Shropshire.	1 F., aged 7.
	Cardiganshire.	1 F., aged 63.
	Napsbury County Asylum.	1 F. (young).
	Prestwich County Asylum.	1 F., aged 17.
	Walthamstow.	1 F., aged 45.
Cole.[12]	Bethnal House Asylum.	1 F.
Lempriere.[13]	Llanidloes (Glamorgan).	1 F.
Reid and Calwell.[14]	Belfast.	1 M.
Johnstone.[15]	Holloway Sanatorium.	1 F.
Rainsford.[16]	Stewart Institution (Co. Dublin).	1 F.
Spurgin.[17]	London.	1 M.‡

* Probably began in Banffshire.
† A third brother of Box's two cases.
‡ Probably pityriasis rubra.

In the same year (1913) Blandy [11] quotes 11 other cases in the Middlesex County Hospital at Napsbury, one of which had already been described by Sambon.[10] Of these all but one were females. In 1914 only four cases were described. Willcocks[18] mentions a female case living in Waterloo-road, S.E.; Box[19] described a child suffering from pellagra at St. Thomas's Hospital; Little[20] had a case, a male, in St. Mary's Hospital, London, and Ross [21] described a female pellagrin in the Royal Edinburgh Mental Hospital, where a similar case had occurred in 1909. With the coming of the great war interest in pellagra of necessity began to wane, so that in 1915 only two cases are reported, one by Little[22] of a doubtful case in a boy living in Poplar, and a female in Glasgow Royal Mental Hospital, described by Henderson.[23]

A gap in the literature now occurs; not till 1920 was the next case, a female living in Edinburgh, reported by Wood.[24] In 1921 Galbraith [25] published a male case in Glasgow, and in 1922 the author [26] mentions a case in a lady living outside Liverpool. Quite recently Hutchison and Paterson[27] have reported two cases in female children occurring in Great Ormond-street Hospital.

It is clear, therefore, from the above review of the literature that pellagra is endemic in the British Islands. Sight must, however, not be lost of the fact

that the disease may become epidemic, especially in asylums. In the Middlesex County Asylum, as already stated, 11 cases occurred in the year 1913, and at the Lancashire County Mental Hospital, Rainhill,[28] during 1922 14 new cases were diagnosed.

Table II. represents mental hospital mortality figures for pellagra in England and Wales for from 1913 to 1922 inclusive, and is of interest in its bearing upon the mortality of the disease in general.

TABLE II.[29]

Year.	M.	F.	Total.	Year.	M.	F.	Total.
1913 ..	0	8	8	1919 ..	0	0	0
1914 ..	0	1	1	1920 ..	0	2	2
1915 ..	3	12	15	1921 ..	0	1	1
1916 ..	2	6	8	1922 ..	3	15	18
1917 ..	0	9	9				
1918 ..	1	3	4	Total.	9	57	66*

* Of these 66 deaths 86·4 per cent. were in women.

Most of the cases were in Lancashire, many of them in one mental hospital. Cases also occurred in the East Riding of Yorkshire, Norfolk, Hertfordshire, Monmouth, and London.

From consideration of the preceding figures it will be seen that the Liverpool district is especially an endemic focus of pellagra, since this is the area mostly concerned in supplying cases to the mental hospital at Rainhill; in some instances these cases are pellagrous before admission. It is surprising that more cases of the disease are not noted in this district. The publishing of the following notes of a new case in Liverpool may, perhaps, stimulate local interest in the disease.

A male, aged 59, a painter now out of work, was sent to me by Dr. Edmund Hughes, of Liverpool, in June, 1923, as a possible case of pellagra.

History.—About March, 1923, patient began to be ill, giddiness being the first symptom noticed. In April his memory began to fail and he became mentally confused. Very shortly after this the backs of the hands became red and burning, and this was followed by a brown coloration. He volunteered the statement that he had suffered from diarrhœa, which lasted a few weeks. There had been no soreness of the tongue and no pain in the back; appetite had been good and he thought he had not lost weight. He had had no previous attacks of a similar nature and had seen nobody with hands like his. Apparently he had never lived abroad. His diet he described as follows: Breakfast: An egg beaten up in tea, salt fish, bread and butter. Dinner: Hot pot, or something like it. Tea at 7 o'clock: Fish, bread and butter, and tea. Supper: Bread and cheese.

On further inquiry it was elicited that the man lived all alone in rooms and that he had to prepare his own meals. He admitted that he probably went without any food at all on many occasions. The fact, too, that the man is out of work suggests that the diet was in reality inadequate.

Condition on Admission.—On the 26th, when admitted to the David Lewis Northern Hospital under my care, he appeared to be prematurely aged and very confused, with very deficient memory. Typical symmetrical pellagrous erythema with pigmentation on the dorsum of both hands, the skin was swollen, dry, and scaly. No signs of dermatitis in other areas. Tongue normal; pupils equal, reacting to light and accommodation; knee-jerks exaggerated but equal; no clonus and no Babinski. Other systems revealed nothing of note. There was no diarrhœa during the man's stay in hospital.

Laboratory Investigations.—Blood-sugar, 0·08 per cent.; blood-urea, 12 mg. per 100 c.cm. Fractional test-meal revealed complete absence of HCl in all samples. Fæces and urine showed nothing abnormal. Wassermann reaction completely negative; spinal fluid gave only a luetic zone curve with the gold sol test (1233211000).

Treatment.—The treatment given was practically entirely dietetic. A liberal mixed diet was ordered, to which were added six eggs per diem. With these simple measures the dermatitis on the hands soon cleared up by desquamation and pealing, leaving a smooth pale skin surface. The patient's general condition improved and his mind became decidedly less confused. Notwithstanding the vigorous feeding a gain in weight of only half a pound was recorded. The patient was discharged from hospital on July 30th, 1923.

It would appear that the ætiology in this case was intimately associated with poor feeding, and that simple correction of this error brought about rapid amelioration of the symptoms for the time being. Whether next spring will show a recrudescence of the condition probably will depend upon the man's diet during the coming winter.

In conclusion, I think that particular note should be taken of the colloidal gold test on the spinal fluid in pellagra cases. Four cases have been examined in this respect; three of these fluids were sent from the County Mental Hospital, Rainhill, by the kindness of Dr. G. A. Watson, and the fourth is from the present case. One case gave the serological findings of a typical general paralysis, which was in accord with the clinical findings. The other three had fluids perfectly normal in every respect except that the colloidal gold test gave a luetic zone curve in each. This finding, in the absence of disseminated sclerosis, may be of value as a diagnostic feature in pellagra.

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LONDON (R.F.H.) SCHOOL OF MEDICINE FOR WOMEN.—The annual dinner was held at the Savoy Hotel, London, on Dec. 6th, Sir Alan Anderson presiding. Over 300 past and present students were present, and the guests included, among others, Lord Riddell, Lady Rhondda, Sir Humphry Rolleston, Sir Walter Schröder, Miss Elizabeth Robins, Mr. V. Warren Low, and Mr. Ernest Miles. After the loyal toasts, the chairman proposed the School and Hospital. He chronicled with sorrow the death of Dr. Percy Saunders and the approaching retirement from the department of pharmacology of Dr. Fred Ransom, and then discussed in a hopeful spirit the present position and the future of the institutions to which both of these men had given valued service. At the present time neither the school nor the hospital were paying their way. The hospital was in the same difficulties as all other metropolitan hospitals, but steps were being taken to enable it to meet its charitable obligations. As to the school, it was a volatile body which had recovered from bad times after the Boer War, when the entry sank to 13, and would doubtless recover again, though this year's entry of 36 was less than half that of a few years ago, when its buildings had been greatly enlarged to meet the demand for more space. The hospital was unique among teaching hospitals in that appointments on the honorary staff were available for women graduates. Nine beds had been endowed during the last year, and £16,500 had been received for the extension of the hospital, largely through the efforts of Dr. May Thorne, the honorary appeal secretary. The school had an excellent academic and athletic record for the past year. Mr. J. Cunning proposed the Guests in appropriate terms of greeting, and Prof. W. E. Dixon, F.R.S., replied on their behalf in a tone of pleasant banter, accounting for the existence of a women's movement in a delightful exposition of the time-honoured argument that life was now organised "from incubator to incinerator" outside the home. Prof. Louise McIlroy, toasting the Chairman, spoke of the illustrious family to which Sir Alan Anderson belonged, and pictured him as a very perfect knight, ever championing the cause of women.

Medical Societies.

ROYAL SOCIETY OF MEDICINE.

THE COMPARATIVE VALUE OF COCAINE SUBSTITUTES.

AT a meeting held on Dec. 7th a discussion took place on this subject. The meeting was arranged by the Section of Laryngology, Dr. H. J. BANKS-DAVIS presiding, and the Sections of Anæsthetics, Odontology, and Otology participated.

Dr. P. WATSON-WILLIAMS (Bristol) said that cocaine was discovered in 1860, and was first used by Keller in 1884 in ophthalmic practice, being thereafter widely used as a surface anæsthetic, and during a long period for injection anæsthesia. Though cocaine had been proved to be valuable in many aspects of medical practice, its toxicity and its abuse by the narco-maniac created a demand for substitutes, as evidenced by the American Committee for the study of toxic effects of local anæsthetics, and the Special Committee of the Ministry of Health. Some of the substitutes now procurable were of great value, and in a measure—i.e., for infiltration anæsthesia and nerve-blocking—had largely displaced cocaine. The repute of most of them, however, was but ephemeral. The ideal local anæsthetic should possess anæsthetic efficiency and lack toxicity in clinical dosage. It should also be capable of sterilisation, readily soluble, non-irritating, and devoid of temptation to the narco-maniac. He asked whether there was yet sufficient evidence that any cocaine substitute was free from the addiction danger; certainly most of the substitutes were highly selective for the cortical centres, and some could cause cerebral excitation. He thought the risk of addiction to cocaine on the part of patients had been exaggerated. The comparative clinical value of cocaine and the other local anæsthetics largely turned on the purpose for which anæsthesia was required; one which was safe for a small operation field might be unsafe for a wider area. Value must be judged according to its employment by (*a*) surface absorption, (*b*) infiltration or nerve-blocking, (*c*) by intra-spinal block. Probably a stronger anæsthetic was required for the nasal mucosa than for the urethra or conjunctiva. Also there might be greater risks in the fauces and tonsils than from the same dosage of the same anæsthetic in the nasal passages.

The Laryngological Standpoint.

Dr. Watson-Williams then proceeded to speak specially of surface anæsthesia in laryngological practice. His experience of eucaine and butyn was limited to their use by surface absorption, and of this alone he spoke. Eucaine he had used since 1902, and later the more soluble eucaine lactate in a 5 to 12 per cent. aqueous solution for rhinological cases. It was fairly efficient for the galvano-cautery, but as it did not produce mucosal ischæmia, adrenalin generally needed to be added. Butyn he had used for nasal anæsthesia in 2 to 5 per cent. aqueous solution. Its action appeared to be exactly similar to that of eucaine lactate, but it was two or three times as strong in the matter of anæsthesia and at least three times as toxic. In the case of all the known substitutes, adrenalin required to be added when vascular constriction was needed. The adrenalin, however, was often followed by a somewhat prolonged secondary-turgescence, sometimes by irritation, and coryza lasting two or three days. For these reasons he now restricted his use of eucaine or butyn to such processes as Eustachian catheterisation. He had often used 5 per cent. butyn for nasal sinus exploration. Butyn was quite as toxic as cocaine and less efficient. He suggested to his son, Mr. Eric Watson-Williams, that he should undertake an experimental research from the clinical standpoint on the toxicity of cocaine and its substitutes, and the result of that had already been published.

Statistics of Toxicity.

Dr. A. E. Bulson (Jackson, Mich.) had described his clinical experience of butyn as a surface anæsthetic, and stated his belief that the combination with epinephrin provided a more profound anæsthesia than did butyn alone, and decreased the chances of toxic effects of butyn. Bulson advised a 2 per cent. butyn solution for light anæsthesia, and for major operations a 5 per cent. solution combined with epinephrin was used by first swabbing the operative field, and within two or three minutes applying to the area, and, if possible, over the source of the sensory nerve supply, pledgets of cottonwool soaked with the solution, but with the surplus squeezed out. About ten minutes later he found the patient, in practically all cases, suffered neither pain nor discomfort. Dr. J. F. Biehn (Chicago had furnished to Mr. Eric Watson-Williams notes of five fatal cases from butyn, and recommended that for topical application to the nose the solution of butyn should not exceed 1 per cent. Butyn, like cocaine, novocaine, stovaine in lethal doses caused convulsions and death from respiratory paralysis. Emil Mayer had collected reports to date of 42 deaths following the use of local anæsthetics occurring within the last three years—viz., 18 from cocaine, 10 from novocaine and cocaine, 4 from butyn, 4 from apothesin, 3 from procaine and novocaine, and 1 each from stovaine, alypin, and butyn with cocaine. As the substitutes were used far less frequently than cocaine, none of them could be called safe. In relieving the pain of tuberculous ulceration Dr. Watson-Williams had found orthoform and anæsthesin valuable.

In using cocaine it was very important to guard against any being swallowed. For 25 years he had employed, for light anæsthesia and for routine examination, 20 per cent. solutions, spraying 5 to 10 minims without adrenalin, and only very rarely had patients displayed any symptoms of distress due to cocaine. He could only recall three cases of serious faintness following strong cocaine applications; never had he met with a case which seemed to contract the habit. Two important adjuvants lessened the risks attending the use of cocaine in surface anæsthesia—namely, (1) the preliminary or simultaneous use of adrenalin; (2) as De Havilland Hall pointed out in 1888, the addition of a trace of sodium bicarbonate immediately before applying greatly increased the anæsthetising potency of a given strength of cocaine solution. Seeing how general was the use of cocaine in medical work, there were very few cases of either death or narcomania from its employment. Some fatalities were certainly falsely attributed.

The Ophthalmological Standpoint.

Mr. R. FOSTER MOORE said the most important drugs which had been used for local anæsthesia were the following: holocaine, α and β eucaine, euphthalmine, novocaine, anæsthesin, subcutin, antinesin, alypin, stovaine, tropacocaine, butyn. An important question was that of drug addiction, and it would be of value to hear of any cases of this following on the use of local anæsthesia for surgery or as a result of prescriptions. If, without the penalties attaching to cocaine, there were not cases of abuse of the substitutes, that would have weight in favour of the substitutes not being regarded as addictable drugs. For ophthalmic work was there a drug or combination of drugs which was equal or superior to cocaine on the following points? (*a*) degree and rapidity of anæsthesia; (*b*) amount of irritation caused, remembering that some might get into the eye during an operation and cause iritis; (*c*) liability to cause desquamation or corneal epithelium; (*d*) degree of absorption if injection of eye not quite absent; (*e*) toxicity; (*f*) stability and sterilisability by boiling; (*g*) whether it stimulates the sympathetic nerve; (*h*) its liability to become a drug of addiction. He said the chief uses of local anæsthetics in ophthalmic work included instillation anæsthesia, for tonometric examinations, for removal of foreign bodies from conjunctival sac or cornea, cauterisation of the cornea, syringing lacrymal ducts, and indeed all operations on uninflamed

eyes, unless the patient was so young as to render a general anæsthetic desirable. For the last group of intra-ocular operations he believed there were a number of cocaine substitutes which were sufficiently efficacious for surface anæsthesia. For infiltration anæsthesia he thought novocaine in 1 or 2 per cent. solution was so efficient and so little toxic that cocaine did not enter into competition with it. Cocaine hydrochlorate was used in solid form for topical application in incising meibomian cysts and in muscle operations, and it would be important to ascertain whether novocaine injections were not equally satisfactory for these purposes. An important quality of cocaine was its power of stimulating sympathetic nerve, producing dilatation of the pupil, and widening of the palpebral fissure; it would be an advantage to know how far other drugs had this effect. He had found holocaine in 2 per cent. solution satisfactory for superficial anæsthesia by instillation, but it caused more smarting than a like strength of cocaine. He had not used it for intra-ocular operations; 2 to 4 per cent. stovaine he regarded as unsatisfactory for cataracts; on two occasions he had had to complete the operation with the aid of cocaine.

The Dental Standpoint.

Mr. F. N. DOUBLEDAY spoke from the dental standpoint. He said the British Dental Association recently issued a circular letter to all members asking whether they regarded the use of cocaine as indispensable in their practice. Of 2327 who replied, 1912 said Yes; 410 said No; the other answers were indefinite. He numbered himself with the 410, as he found novocaine, injected hypodermically, produced as rapid an onset of anæsthesia and as profound a loss of sensation as cocaine. As the result of a good deal of testing he firmly believed that novocaine was the most efficient cocaine substitute—i.e., 0·02 g. of novocaine and 0·0005 g. adrenalin. He gave three examples of what this novocaine solution would do. A single injection of 1 c.cm. into the vicinity of the nerve entering the apical foramen of a tooth would, within one minute, so anæsthetise a live sensitive tooth-pulp that it could be painlessly removed; 50 mils injected into the soft tissues on either side of the alveolar process would, within a minute, permit the removal of a tooth, except a mandibular molar, without discomfort; 2 or 3 c.cm. injected into the neighbourhood of the inferior alveolar nerve would produce complete hemianæsthesia of the mandible and allow painless removal of any mandibular tooth of that side. This anæsthesia took from 5 to 30 minutes to develop, according to the skill with which the solution was placed in the region of the inferior dental foramen, and he had done long operations, involving the use of hammer, chisel, and electric engine, with novocaine, and the patients still remained his friends! Most of the other cocaine substances he had named yielded similar results in operations, though with less certainty and with more marked after-effects. He had used novocaine in his hospital practice for 16 years without serious ill-effects, even though the physical condition of many of the patients was poor.

Seen by the General Anæsthetist.

Dr. J. BLOMFIELD, speaking as an anæsthetist, said the use of these drugs in his clinic was confined to injection; he had not employed them for surface anæsthesia. He had entirely abandoned the use of cocaine, and he believed most of his colleagues had also. The drug now almost entirely used for local injection was novocaine, in a 2 per cent. solution. Large amounts of novocaine could apparently be injected without untoward symptoms occurring. That was especially the case when it was injected into the sacral canal. Still, when large amounts were given in this way an alarming series of symptoms were likely to happen, though no fatality from them had yet been recorded—namely, generalised convulsions, affecting nearly all muscles. One such case he saw appeared to be going through a severe epileptic fit. The drug he chose when spinal injections were needed was stovaine. In some of the alleged fatalities from it the drug could not justly be accused of the disasters when all the circumstances were taken into account. However, stovaine was now much less frequently a cause of bad symptoms now it had been found that its chief danger lay in the production of a fall of blood pressure. This could be counteracted by having the patient in the head-down position.

The Otological Standpoint.

Sir WILLIAM MILLIGAN, speaking as an otologist, said that in view of the ground which had already been covered by previous speakers, he proposed to practically limit his remarks to butyn. Otological work did not permit of the same range of utility for the employment of local anæsthetics as did that of laryngology, rhinology, ophthalmology, and dentistry. This was largely because of the configuration, position, and remote accessibility of the organ. So far, cocaine had practically held the field. Any new anæsthetic must be critically examined from several points of view: (1) Was it as effective as those now in use? (2) Was it reliable? (3) Had it toxic properties, and if so, how did it compare with other local anæsthetics? Butyn could be applied directly to the tissues in either the fluid or the solid form, by subcutaneous injection, or by means of infiltration. In aural work it must be in close contact with the mucosa of the middle-ear cleft; this was accomplished by either swabbing or the local application of small pads of non-absorbent wool soaked in a watery solution of the drug. Thus its use was largely confined to the cases of middle-ear disease in which the tympanic mucosa was exposed. Instilled into the meatus as a preliminary to the removal of polypi or granulation tissue it was as satisfactory as cocaine. Applied to the mucosa of the middle ear or Eustachian tube orifice it produced anæsthesia in from one to two minutes, but not of sufficient degree for the application of a strong caustic. A 1, 2, or 5 per cent. watery solution used every three minutes until four applications had been given caused a more profound anæsthesia, which lasted half an hour. That the drug had no ischæmic effect was not such a disadvantage in aural as in other work, and this defect could be made good by adrenalin. As to any toxic properties of butyn, no patient of his had been in any way inconvenienced by its employment. In any very painful proceeding, such as incision of the drum head, the butyn dissolved in aniline oil enhanced its anæsthetising power. For the production of infiltration anæsthesia a 0·5 per cent. solution gave quite satisfactory results, as the effect was deep and lasting. In aural work butyn did not appear to him to offer any particular advantages in comparison with cocaine; on the other hand, it had certain disadvantages, one of which was its failure to cause contraction of the tissues of an organ like the ear, where there was very little room to work in. Another drawback was the hyperæmia it produced. The advantages he had found from butyn were as follows: Its action was more rapid, more powerful, and of longer duration than that of cocaine, its potency being twice that of the latter. It was not damaged by keeping or by boiling, and it did not engender a "habit"; moreover, it could be used effectively in lower concentrations than could other synthetic anæsthetics. Two of his patients contracted the cocaine habit. In the net result his preference was for cocaine.

Experience with Butyn.

Mr. ERIC WATSON-WILLIAMS (Bristol) confined his remarks to butyn, of which much was being heard at the present time. By the courtesy of Dr. Biehne, of Chicago, representing the proprietors of this substance, he had received important information concerning it. This anæsthetic was selected after numerous trials and experiments with analogues, and since it was put on the market in 1921 there had been a modification of view in regard to its degree of toxicity. Animals with relatively small brains tolerated much larger doses of cocaine than did those with larger brains, and the latter survived larger doses than did man.

Earlier in the trial it had been suggested that in man butyn was less toxic than cocaine, but further experiments on monkeys showed that this view could not be upheld; butyn must be regarded as at least—gramme for gramme—as toxic as cocaine. Bulson advised a 5 per cent. application of butyn for the nose, but that recommendation had since been modified. Mr. Eric Watson-Williams then read, from Dr. Biehn's letter, details of five deaths which had followed the use of butyn. The first was that of a woman aged 35, who had a goitre, and who came for nasal septal resection. She was given morphine 1/6, atropine 1/200 hypodermically. Cocaine was sprayed in the nose, followed by 5 per cent. butyn on tampons. Death, with convulsions, occurred in ten minutes. There was no post-mortem examination. The second was that of a boy aged 16, who came for the same operation, and the anæsthetics were the same, except that the cocaine sprayed was of 1 per cent. strength. He died in 20 minutes, and status lymphaticus was diagnosed. The third was a woman aged 38, who came for removal of tonsils. Morphine 1/8 was given half an hour before operation, and 4 per cent. cocaine was applied on a tampon to the pillars of the fauces and the base of the tongue. Then 2 drachms of 1/4 per cent. butyn was injected into the right tonsil. The left tonsil was similarly treated. Before the operation could be started the patient fainted, then had convulsions, and attempts at resuscitation failed. Death was attributed to paralysis of the respiratory and circulatory centres. The next case, of a man aged 26, came for tonsillectomy. The tonsil was injected with an unknown quantity of butyn solution, prepared by adding 2 drachms of a 5 per cent. solution to 3 oz. of distilled water and 12 drops of epinephrin. After the injection of one tonsil the patient became apprehensive, but was reassured, and then the other tonsil was injected. In a few moments he fainted, passed into convulsions, and died. It was reported as a case from surgical shock; there was no post-mortem. In the last case 40 c.cm. of a 2 per cent. solution was used to produce sacral anæsthesia, and death occurred in ten minutes—obviously a case of overdose. The proprietors stated that they did not recommend butyn solution, particularly when combined with epinephrin, for hypodermic injection in such vascular areas as the tonsil, nor the concentrated solution for the nasal septum. Butyn acted more rapidly than cocaine, was more efficient, and its effects were more prolonged. It should be used in more dilute solutions. Subjects of status lymphaticus showed an idiosyncrasy to butyn. It was reported that butyn had been used in 1 per cent. solution by dentists in over a million cases for extraction without one untoward result. In conclusion, the speaker deprecated drawing conclusions from any but complete case-reports.

Discussion.

Mr. S. F. ST. J. STEADMAN said that in his dental work he usually preferred to inject nerve trunks away from the area of operation rather than doing a submucous infiltration at the actual site of operation: there was then less liability to any complication by sepsis. He had not dared to use cocaine for this, as that drug was decomposed by boiling. He usually employed an isotonic 2 per cent. solution of novocaine, and he was fairly satisfied with this drug, but on one or two occasions it had failed him. He had used a 1 per cent. non-isotonic solution of butyn in 200 cases. In only one did he fail completely to get anæsthesia, and in two the degree was not satisfactory. In the case of the larger trunks of nerves it was usually desirable to wait 15 minutes. The after-pain was much reduced if the Ringer solution was prepared fresh each morning in the manner he detailed. It was not desirable, he found, to use more than 1/600 gr. of adrenalin for each injection or each series. Butyn was responsible for a considerable amount of after-pain, possibly because it was a sulphate and was decomposed by chlorides. A freshly-prepared solution of novocaine gave less after-pain than did nitrous oxide gas.

Dr. WILLIAM HILL agreed with Dr. Watson-Williams and Sir William Milligan that in competent and experienced hands cocaine was not a dangerous drug. One could test a patient's tolerance by using 2½ per cent. on the nose, and if there were no signs of palpitation of the heart one could safely proceed with it. If such signs did occur, recourse should be had to a general anæsthetic or one of the cocaine substitutes. He remarked that the early reports as to the universal safety of butyn had now been modified as a result of wider experience. He had found butyn an inconvenient drug to use for two reasons: it was not ischæmic, and the necessary addition of adrenalin caused coryza, owing to irritation of one or other turbinal. And sometimes it was uncertain in its action. He seldom had cases of cocaine poisoning. Two other drugs could be used for surface applications: one was eucaine lactate, but the operator was very liable to be "let down" by it. Stovaine was the other; it was soluble in 10 per cent. solution, but only that morning he had a case which proved it was not free from toxic risks.

Dr. ALBERT A. GRAY (Glasgow) spoke of the effect of some of the local anæsthetics on the tympanic membrane. Eucaine with aniline he found very much inferior to cocaine; and the same was true of novocaine and stovaine. And aniline itself had the defect of its virtues; it so easily penetrated epidermis. He had never had a patient who became subject to the cocaine habit; the nearest to that was a man who needed his nose cauterised several times, and he continued to come longer than necessary because of the pleasant after-effects. He (the speaker) never experienced trouble or anxiety in regard to cocaine, perhaps largely because he used it chiefly in the form of an ointment, which did not result in the heart being taken by surprise.

The PRESIDENT related a case in which a man attended often for throat spraying with cocaine, and then met with an accident which prevented the treatment being continued. He then confessed he had kept up his attendances longer than necessary, as he liked the subsequent sensation.

Mr. WOODMAN spoke of a patient on whom cocaine was first used, and then at a subsequent visit novocaine, and he requested that cocaine be used in future.

Mr. T. B. LAYTON said the various points in connexion with local anæsthesia struck users in different ways according to their special work. In ophthalmic and rhinological work the important point was the irritative effect of the drug. Sometimes he had injected ½ oz. of 0·5 per cent. novocaine without bad results. He proceeded to speak on the influence on the patient of suggestion. The patient's fear and apprehension were real factors, and they might explain some of the events which had been related in this discussion. And if the doctor was afraid of toxic symptoms when using a new drug, this state of mind was subtly communicated to the patient. Dr. Graham Brown, of Melbourne, would not use novocaine; he always employed cocaine, and was careful to have the same brand as that so largely used by dental surgeons. In the nose local anæsthesia was closely concerned with hæmostasis, and butyn did not cause hæmostasis. He used 1 per cent. novocaine with adrenalin for injecting tonsils. He had put that into one tonsil of a patient, and into his other tonsil 0·5 butyn with four times as much adrenalin as in the other, and the amount of hæmostasis during the operation on the two sides was not to be compared. It was necessary to go on adding adrenalin until the quantity was quite considerable. He believed there was somewhat more danger of reactionary hæmorrhage with local than with general anæsthesia, certainly in the case of the tonsils.

Mr. MARK HOVELL said that for some time past he had discontinued using cocaine for nasal work, employing eucaine in its stead when local anæsthesia was required, of 5 per cent. to 10 per cent. strength. To clear the nostril of polypi he used 2 per cent. novocaine.

Dr. J. KERR LOVE said he had used alypin. Some years ago he tried that in 10 per cent. solution for surface application in the nose, and after using it about 20 times he concluded it was much more toxic than was cocaine of the same strength. He therefore gave it up. Before using cocaine he gave the patient a hypodermic injection of hyoscine compound (B. W. & Co. "A") 20 minutes before the operation, and he had found that was a very safe antidote for symptoms of incipient cocaine poisoning; as also was a 10 per cent. solution of calcium chloride injected intravenously.

Mr. SYDNEY SCOTT said he had found butyn useful for patients who had disagreeable after-symptoms from cocaine. He had never seen or heard of a case of addiction to the cocaine habit following its use for surgical purposes. He had never done a mastoid operation under local anæsthesia, but he had removed a brain abscess under novocaine. The patient was unconscious, and was with difficulty aroused subsequently. There was some reflex action when the cranium was opened, but he was able to find a deep-seated abscess and enucleate it from the parietal region under local anæsthesia with help derived from the fact that the patient was partly comatose. Sometimes the application of a little pure carbolic acid with Condy's fluid to the operation area enabled a patient to tolerate incision of the tympanic membrane. As long as 25 years ago students at St. Bartholomew's Hospital were taught that it was very dangerous to spray the nose with cocaine. The great precaution to observe was against the swallowing of cocaine by the patient, which could be done by having the head leaning forwards. Following novocaine and adrenalin there was some liability to cramp in the heart region, probably due more to the adrenalin than to the novocaine. He had used a 5 per cent. isotonic solution of butyn in the same way as he had used cocaine, chiefly for Eustachian catheterisation, and he could confirm the conclusions recently set out by Dr. William Hill.

Mr. HERBERT TILLEY said he had used novocaine frequently for resection of the nasal septum and for operating on the antrum. It was very efficient and he had never seen the slightest danger from it, nor even uncomfortable symptoms. He had also used it 15 times for urgent tracheotomy in cases in which a general anæsthetic was not only impossible, but would probably precipitate disaster. He had been struck by the comparatively large quantity of novocaine which could be used without any apparent distress. He agreed with those who felt that we did not yet possess a drug which produced the combined qualities of anæsthesia with contraction and retraction of the tissues. And if a drug did not possess ischæmic properties, he did not see how it could take the place of cocaine in ordinary practice. For 15 years he had not seen a case in his consulting room which gave either him or the patient any anxiety. He fully agreed with Mr. Layton's remarks on the influence of suggestion.

Reply.

Dr. P. WATSON-WILLIAMS, in reply, said Mr. Eric Watson-Williams found that cocaine became rapidly changed in the body into ecgonine, the harmless base. His own experience with novocaine had always been happy when used for injection purposes. He thought the profession had got into the wrong mental attitude in regard to cocaine. If a better substance could be found it would be welcomed, but it was a pity to make an attempt to black-list it as something to be avoided if possible because it was socially abused at a time when it was available for anyone. This was the wrong standpoint for scientists. There were those who would like to prohibit the use of alcohol by the profession in the same way.

SECTION OF BALNEOLOGY AND CLIMATOLOGY.

AT a meeting of this section on Nov. 29th, Dr. C. W. BUCKLEY delivered as his Presidential Address an introductory paper to a discussion on the subject of

DIURESIS.

He said that members of the section employed therapeutic remedies which differed in many respects from those in the Pharmacopœia and had not received proper attention from the teachers of pharmacology. The gross effects of mineral-water drinking were obvious, but how and why these effects were produced was often obscure. When mineral waters were employed to produce diuresis, the aim of the physician was to promote the excretion of harmful solids, the result of a disordered metabolism, rather than the mere excretion of water. For this purpose certain mineral waters of low concentration were superior to distilled water; and the effects of the former were often prolonged, while those of the latter passed off rapidly. Marshall and Carr, who had investigated the effect of plain water drinking, concluded that the excretion of chloride and of urea was increased, while creatinin was little affected. The results of these investigations were somewhat vitiated by the fact that no fluid was allowed during the control period, so that the control results were hardly normal, and further by the fact that the degree of hardness of the water drunk was not stated. The latter was a point of some importance, since it was known from the experiments of Keller that hard water possessed a greater diuretic power than distilled or soft water.

The total amount of salts in a dose of mineral water which would produce diuresis was very much less than that required to produce the same effect in artificial solution. Two explanations of this were possible: either the mineral elements in the natural water were more active through existing largely as free ions, or the various ingredients of the water acted as adjuvants to one another, an effect which had been demonstrated by the work of Schloessor in the case of certain salts as adjuvants to caffein. The action of mineral waters in producing diuresis was shown by Blum to be partly upon the cells of the tissues generally and partly upon the renal epithelium. Blum therefore classified certain salts, notably the chlorides of calcium and potassium, as "interstitial diuretics." These salts, whose action was mainly due to the kations (Ca and K), but partly also to the Cl, acted by dehydrating the tissue colloids. Sodium chloride, on the other hand, caused a hydrating of the colloids and opposed the action of the calcium salts. This antagonism of calcium and sodium was of great importance in view of the fact that they were the commonest constituents of our natural spring waters. Three well-defined types of mineral waters possessed diuretic properties—the sulphur water, including the sulphuretted salines, the calcareous, and the radio-active thermal waters of low mineralisation. Since the sulphuretted salines contained sodium chloride their diuretic action presented a problem.

Recent observations by Keller at Rheinfelden, and Violle at Vittel showed that NaCl was definitely inhibitory of diuresis. The latter concluded that each of the elements of a water, conceived as ions, had its own peculiar action and that only when there was a certain definite relationship between the various elements of a spring water was there any physiological property or therapeutic value. These relative proportions were comparatively rare among the considerable number of natural springs. Violle's experiments were of great importance as indicating why two waters of approximately similar composition so often differed widely in their actions, but Dr. Buckley thought that the results would have been more valuable had the artificial solutions used been of nearly the same strength as the natural spring water of the Grand Source. It might well be that the weaker natural solution was more powerfully diuretic owing to its higher degree of ionisation. Violle found that the diuretic action of a water was neutralised when the number of Na ions was half that of Ca ions, yet Zeller found that NaCl solutions, administered either orally or intravenously, produced a diuresis, and Keller found that NaCl notably

increased the excretion of urea. The problem was, therefore, a complex one and might be affected by the diet and amount of fluid drunk before the test, as was suggested by the observations of Baird and Haldane. Certain effects of calcareous waters upon metabolism were also of importance. Kionka, in 1900, showed that calcareous waters tended to diminish the urea in urine, and in 1921 Miyadera found that this effect was produced without affecting the total nitrogen metabolism. Observations on the blood showed that the urea content was progressively diminished.

No experimental observations upon the effects of the third or radio-active type of waters had been published, but the clinical evidence of their diuretic effect was overwhelming. Such waters contained a large number of mineral salts in such minute quantities that they were almost completely ionised, as well as being charged with considerable amounts of gas—nitrogen, carbon dioxide, argon, and helium; they were radio-active owing to the emanation or "niton" which they contained. Experiments with artificially-produced radio-active solutions had not produced results comparable with those of the natural waters, perhaps owing to the lack of gaseous mineral constituents upon which the emanations might be supposed to have an adjuvant effect.

Dr. Buckley suggested that the explanation of the diuresis produced by the minute quantities of mineral salts in certain waters such as the Buxton mineral water might lie in their action on the pituitary body; in this respect the slight but definite and fairly constant fall in blood pressure after drinking this water was very suggestive, since slight stimulation of the posterior lobe of the pituitary caused diuresis with a fall in arterial pressure. Increased stimulation of the posterior lobe reversed this effect, and here again a parallel occurred in the case of a few patients in whom the ingestion of Buxton mineral water caused a diminution of the output of urine. In such cases, he suggested, smaller doses of the water might have the desired effect of diuresis by avoiding over-stimulation of the pituitary.

Discussion.

Mr. J. RACE had investigated the comparative effect of Buxton thermal water and of distilled water in a number of cases of tophaceous gout. The method selected was to place the patient upon a normal hospital diet containing 50 oz. of fluid for several days until a general equilibrium was established and then to collect the urine over 24-hour periods; during the second period the normal fluids were supplemented by 20 oz. per diem of distilled water divided into three equal portions, and during the third period distilled water was replaced by mineral water. In some cases during a fourth period the effect of mineral-water baths on alternate days in addition to mineral-water taken internally was determined.

While the diet was slightly variable it was found that the nitrogen excreted in the urine was fairly constant, and that such a diet, being a normal one, did not cause digestive disturbances. In 16 cases the following average volume of urine was passed: Period i. (no extra periods), 1066 c.cm.; ii. (distilled water), 1349 c.cm.; iii. (mineral water), 1626 c.cm. In 11 cases in which the effects of baths were tested the following averages were obtained: Period i., 1113 c.cm.; ii., 1409 c.cm.; iii., 1693 c.cm.; iv. (mineral water and baths), 1745 c.cm. From these figures it appeared that the diuretic value of mineral water was much superior to that of distilled water; with the former 98 per cent. of the extra fluid was excreted in the urine, while with the latter only about 50 per cent. was excreted. The baths at a temperature of 96°–98° F. did not materially affect the amount of diuresis. In all cases the increase in the flow of urine was slightly less than the amount of extra fluid ingested. Concurrently with the increased flow of urine the total amount of salts and solids in the urine was also raised by mineral water drinking. Thus the figures for sodium chloride were: Period i., 7·4 g. per diem; ii., 7·8 g. per diem iii., 8·2 g. per diem; iv., 9·5 g. per diem. A most important feature of the diuresis obtained by mineral water was the reduction in the hydrogen-ion concentration of the blood, which allowed of a greater solubility of sodium urate, and tended towards a more complete nitrogen metabolism. Thus the average amounts in grammes per diem of urinary nitrogen appearing as urea and as uric acid respectively were: Period i., 7·65 and 0·128, ratio 59/1; ii., 7·72 and 0·117, ratio 66/1; iii., 7·85 and 0·113, ratio 69/1. The increase in the total amount of nitrogen excreted was small but quite definite, while the uric acid content of the blood was reduced on the average by 25 per cent., although the amount excreted in the urine was actually diminished. From this it would appear that there was a reduced absorption of uric acid precursors from the intestines, or an increased destruction of uric acid, or a reduced production of uric acid in intermediary metabolism. Possibly all three actions occurred.

From his observations Mr. Race concluded: (1) that the natural Buxton mineral water had a diuretic effect superior to that of distilled water; (2) that it increased the elimination of sodium chloride; and (3) that it decreased hydrion concentration and favourably influenced metabolism.

Dr. FORTESCUE FOX suggested that the periods i., ii., iii., and iv. should be more prolonged in future experiments since some persons were affected over long periods by a short period of mineral water drinking. In the baths experiment the temperature of the water was very important.

Dr. W. LANGDON BROWN commented on the smallness of the variation in nitrogen excretion produced by mineral water drinking which lay well within the normal range of variation produced by diet. Throughout the discussion it was assumed that diuresis was beneficial to the patient. That this was not necessarily so might be seen from the condition of patients suffering from diabetes insipidus. Without having heard the President's introduction he (Dr. Langdon Brown) made similar observations upon the probable effect of the endocrine factor in diuresis. He had recently suggested that the pituitary body regulated the threshold of the kidney for water. The effect of light, warmth, and climate upon the surface of the body acting upon the sympathetic system was also a factor in the problem.

Dr. HALLS DALLY, Dr. J. B. BURT, and Dr. W. EDGECOMBE (who referred to the extreme difficulty of obtaining accurate and reliable figures in experimental work of this kind and also described the diuretic effects produced by the two types of salines at Harrogate) also spoke.

Dr. BUCKLEY, in reply, agreed that it was necessary to emphasise that diuresis if it concerned water alone was not an object to be aimed at, but if with the increased excretion of water went an increased elimination of waste products in solution a very useful end was attained, and even more important was the associated effect upon metabolism indicated by Mr. Race's experiments. He did not attach any special importance to the increased excretion of urea, but to the variation in the urea-uric acid ratio in respect of which the criticisms as to the influence of variation in diet, &c., had not the same force. His remarks on the action of saline waters had not been intended to belittle their value, but to indicate the trend of modern criticism as to the mode by which they produced their beneficial effects.

SECTION OF ANÆSTHETICS.

A MEETING of this section was held at the Medical Institute, Birmingham, on Dec. 1st, Dr. A. L. FLEMMING, the President, being in the chair. Dr. K. B. PINSON read a paper on the

Condensation of Dimethyl Ether and Its Use as an Anæsthetic.

Having stated the reasons for believing a gas to be as such better fitted for use as an anæsthetic then a liquid, Dr. Pinson said that dimethyl ether is a gas at normal temperature and pressure. Its physical properties

are not known. He found that it boiled at 24° C., and that at 100° C. it exerted a pressure of 97 pounds to the square inch. It can be safely compressed into cylinders at ordinary temperatures. Dr. Pinson was able to obtain only a small quantity for experiment. The gas condensed into a thin mobile liquid with slightly ethereal pleasant odour.

Mr. L. P. GAMGEE read a paper on

A Surgeon's Thoughts on Anæsthesia.

He pleaded for close coöperation between surgeon and anæsthetist. Troubles often arose because an operation started before anæsthesia was deep enough, and this might be the fault of the anæsthetist for letting the surgeon begin, or the surgeon's fault for ignoring the anæsthetist's warning. When operations on the thyroid gland were contemplated the administration of the anæsthetic should not begin until the surgeon was ready to operate at a moment's notice. In his opinion lightness of anæsthesia added to the risk of shock in some operations; moreover, it might lead to inefficiency of the operation. When in abdominal operations the surgeon was hampered by the character of the breathing he should desist from his manipulations until the abdominal movements were satisfactory. This was generally secured by getting the patient more deeply under or by changing the anæsthetic. Mr. Gamgee did not like either morphia or scopolamine before operations. He asked why the Vernon Harcourt apparatus was not more frequently used, and believed that operating theatres were often kept at too high a temperature.

The PRESIDENT advocated the provision of recovery wards.

Mr. W. BILLINGTON dwelt on the danger of acetonæmia following on the use of scopolamine and morphia. He preferred small doses of omnopon longer before the operation than the usual practice. Plenty of fluid should be given both before and after operation.

Prof. F. HOBDAY demonstrated his regulating apparatus for giving chloroform to animals. Dogs had proved, he said, excellent subjects for chloroform, contrary to the common opinion, when the drug was properly administered.

Dr. WALTER JORDAN related his long and successful experience as to chloroform at an orthopædic hospital, and Mr. KIRKBY THOMAS demonstrated a new intra-tracheal apparatus.

After the meeting, dinner was given at the Union Club to those members who had come from London and other towns away from Birmingham. The travellers were much indebted to their Birmingham colleagues for their hospitality.

MEDICAL SOCIETY OF LONDON.

A MEETING of this Society was held on Dec. 10th at 11, Chandos-street, Cavendish-square, W., Dr. HERBERT SPENCER in the chair.

Mr. EARDLEY HOLLAND opened a discussion on

INTRACRANIAL HÆMORRHAGE IN NEW-BORN CHILDREN: ITS PATHOLOGY, EFFECTS, TREATMENT, AND RESULTS.

During the past few years, he said, the interest taken in fœtal and neonatal pathology had shown a remarkable revival, and an immense amount of material had been investigated under grants from the Ministry of Health and the Medical Research Council. No one interested in the subject could omit to study the pioneer work published 32 years ago by Dr. Herbert Spencer under the title "On Visceral Hæmorrhages in Still-born Children." This work had not received the prominence it deserved; not only had all Dr. Spencer's conclusions held good, but the only new observation made in cranial pathology was that on injuries of the dura mater septa.

Intracranial hæmorrhage was a prolific cause of fœtal and neonatal death, and the prevention of its high mortality an urgent problem of preventive medicine. The majority of these fœtuses, apart from a certain number that were premature, were otherwise sound; they were in a totally different class from the macerated fœtuses that died before labour from some maternal, fœtal, or placental disease. Ætiologically intracranial hæmorrhage could be divided into two groups, traumatic and asphyxial, the former being vastly more important.

Behaviour of the Fœtal Head under Stress.—The fœtal head was a fragile object whose structure displayed a remarkable combination of qualities which enabled it to resist injuries, with defects which disposed it to suffer them. In the birth canal the head was subjected to the action of compressive forces which were the resultant between the powers of labour and the resistance of the maternal passages. The head was therefore in a state of stress during labour—a state which might conveniently be termed "cranial stress." This stress might be regarded as consisting of two elements, a general compression of the whole head and a simple longitudinal compression by opposite forces acting at the ends of the long diameter of engagement of the head in the pelvis. The fœtal head consisted of a non-rigid shell composed of loosely-jointed plates of pliable bone jointed on to a rigid base and strengthened by the attachment of the dura mater and its system of septa. The outstanding feature of the fœtal head was its ability to undergo changes in shape or moulding when subjected to stress. Alteration in shape was brought about partly by a displacement of the bony vault as a whole, and partly by bending of the individual bones which composed it. The displacement of the vault as a whole took place chiefly at the junction of the plate with the base of the occipital bone, a hinge joint which allowed a considerable range of movement forwards and a smaller range backwards. By far the commonest alteration in shape was elongation in a vertical direction with corresponding shortening in the antero-posterior direction. (Slides were shown dealing with the mechanics and results of traumatic intracranial hæmorrhage.) A certain amount of stress occurred in every labour, and in every labour there was a certain amount of head-moulding, but excessive stress gave rise to a dangerous degree of alteration in shape.

Excessive Cranial Stress.—The most important circumstances under which excessive stress and extreme alteration of the shape of the head might occur were disproportion between the head and the maternal pelvis, deficient flexion of the head, and great rigidity of the maternal pelvic floor. The forceps might cause injuries when applied too early or with too great force, when misapplied to the antero-posterior diameter of the head or used to deliver a premature fœtus, or when the fœtus was delivered too rapidly. The septa were much better able to resist a slow than a too rapid head-moulding. In a breech labour the after-coming head was rapidly, though comparatively momentarily, compressed in a series of diameters lying between the forehead and the occiput; thus tearing of the septa was liable to occur as a result of breech labour. He believed that the hæmorrhage generally came from the vein of Galen. Any movement of the apex of the tentorium was necessarily transmitted to the vein of Galen, whose fixed point was at the entrance to the straight sinus. The vein might become kinked, stretched, and engorged, and the main vein or some of its tributaries were easily ruptured. Failing detection of the ruptured vessel, a valuable clue to the origin of the hæmorrhage was its exact situation in the subdural space and its relation to surrounding structures.

Fœtal Asphyxia.—When the circulation of the umbilical cord was obstructed, or the placenta became widely separated or extensively degenerated, the fœtus passed into a state of asphyxia. Most observers agreed that asphyxia was the cause of death in from 30 to 40 per cent. of fœtuses who died during labour. Differentiation between traumatic and asphyxial hæmorrhage was not always possible, and in many cases both factors had existed. Observers differed as to

their relative frequency. In his own 92 cases of cerebral hæmorrhage he placed 75 in the traumatic and 17 in the asphyxial class.

Sites and Extent of Intracranial Hæmorrhage.—The hæmorrhages might occupy (1) the subdural space, (2) the lateral ventricles, or (3) the cerebral substance. They were diffuse, and often occupied more than one site—a point of great clinical importance. Hæmorrhage might be severe, moderate, or slight; a large subdural hæmorrhage would spread into all the cranial fossæ as well as over the surface of the brain. Intraventricular hæmorrhage was much less common than the subdural type.

The Surgical Treatment of the Condition.—These cases were not suitable for operative treatment. The hæmorrhage was usually inaccessible at the base of the brain and in the region of the tentorium; also there were often associated visceral hæmorrhages elsewhere. Even if an infant were saved from death by operation, he would very likely become a member of the community who would have been better dead. He would rather show a mother her baby dead than have her reproach him afterwards with a paralytic and deficient child.

Dr. H. C. CAMERON followed. His paper is given in full on p. 1292 of this issue of THE LANCET.

Discussion.

Mr. LAMING EVANS said that he would limit his remarks to treatment and to the results of treatment. A surgeon was entitled to ask whether the spasticity arising from hæmorrhage was different from spasticity arising from primary neural degeneration of the brain. In orthopædic practice one dealt with the results of upper motor neural lesions; the results of treatment of acquired spasticity from cerebro-spinal fever, &c., were excluded from this discussion. Many methods of treatment of common deformities of the upper and lower extremities were available, but no surgical treatment was complete without special education of the patient. Fifteen years ago great hopes were raised by the operation of section of the posterior roots; he had used it in four cases, with no good result. The operation was now largely abandoned; the success claimed for it was, he thought, due to good after-treatment. Muscle education was important; he had never seen any benefit to result from electrical stimulation. Continuous stretching by means of movable or immovable appliances was of value. The two types of operation were, first, operations on muscles and tendons, and second, operations on the nervous system. The results of the former were better known. Twenty-five years ago tenotomy was almost universally used, but after this operation the case was always liable to relapse. The principle involved in tenotomy was now largely carried out by plastic elongation; he himself used this method where an over-correction was possible or where future function would be interfered with. In England neurectomy had long been used in cases of spasm; the object of this operation was to restore muscle balance by the paralysis of certain fibres, so that the remaining fibres could balance their antagonists.

Mr. H. A. T. FAIRBANK did not think that the origin of the rigid condition was of much consequence to the orthopædic surgeon; the latter had only to deal with results, provided that the active lesion was already finished with. He suggested that the age of 3 years was the time for operation; until then the child had not had a fair opportunity of learning normally how to walk. If at the age of 3 a child could sit up alone he would operate on arms or legs if they required it. Older cases were infinitely harder to deal with, because of anatomical shortening of spastic muscles and of ligaments. Before operation the child must make an effort to walk. Contra-indications to operations were idiocy, choreic movements, and fits—the last-named if they occurred with any frequency. Bromides should be given for a few days before and after the operation. Coming to details of operation in various sites, he found it best, if the whole obdurator nerve had to be removed, to open the abdomen. Surgeons were apt not to carry their operations far enough; it was well to remove more of a nerve than was now usually removed. With regard to flexion of the knee, he found operation on the sciatic nerve better than simple division of the hamstrings. In older children with anatomical shortening, however, he also divided the hamstrings. He believed in trying to select the operation most suitable to the individual case rather than in attempting to apply any exact rules. He found results in the arm much worse than those in the leg, the action of the arm not being automatic. If the child tried to walk he had to use both legs; the difficulty when he had one sound arm was to make him use the other. Lastly, apparatus should be used after operation; the final result of a case always depended on after-treatment.

Mr. L. G. PHILLIPS was chiefly interested from the obstetric point of view, and in causation and prevention. In the course of an inquiry carried out for the Medical Research Council, he had found that premature babies were four times more liable to have intracranial hæmorrhage than babies born at full term. The lesson to be learned from this fact was, he thought, that induction should not be attempted further back than 35 or 36 weeks, and that forceps should not be applied to premature babies if their application could be avoided. Of his 20 cases of intracranial hæmorrhage examined post mortem during the inquiry already referred to, four cases had followed toxæmia of pregnancy, being due to damage to the endothelium caused by the circulating toxin. The lesions in eclampsia and other conditions were chiefly due to cell degeneration resulting from this damage; the capillaries inside the skull probably suffered in the same way. In half of his 20 cases there had been a rupture of the veins covering either the cerebrum or the cerebellum. Only one case was of intraventricular hæmorrhage. Other injuries were unilateral and bilateral horizontal tears of the tentorium; there were a few cases of petechial hæmorrhage throughout the brain.

The PRESIDENT said that with regard to meningeal hæmorrhage resulting from damming back of blood in the veins, he had suggested 32 years ago that this was due to the depressibility of the lower angle of the parietal bone; this bone might press on the great anastomotic vein and cause engorgement. He would like to suggest to Dr. Cameron and others concerned with children's diseases that research into injury of the testes of new-born children would yield very interesting results.

Reply.

Mr. EARDLEY HOLLAND, in a brief reply, asked how many infants born with cranial hæmorrhage survived. It had been thought that none of them did survive, but he believed that a large number actually lived after a slight tear had occurred; in support of this view he recalled the fact that infants with enormous intracranial tears sometimes lived for a week. During the early part of the war he had come across a case of a baby which lived for two days, and showed post mortem an extensive healed tear in the left side of the tentorium. This case he had photographed; he had never come across another one.

Dr. CAMERON also briefly replied.

LIVERPOOL MEDICAL INSTITUTION.

A MEETING was held on Nov. 29th, Prof. J. HILL ABRAM, the President, in the chair.

Dr. W. JOHNSON read a note on

Acute Infectious Polyneuritis.

He said that amongst the rarer forms of multiple peripheral neuritis is that known as auto-infectious or acute toxic polyneuritis. He gave a short account of two cases he had seen recently, and pointed out that the disorder is usually ushered in by what the patient

may describe as a "chill" or "influenza." There may be a variable interval between such a chill and the onset of the neuritic symptoms. These usually begin as sensations of numbness and tingling in the toes and fingers, followed by marked motor weakness in all four limbs. Soon the facial muscles become affected, and this observation, combined with, later, the occurrence of trunk muscle weakness, serves to indicate the correct diagnosis. Sensation is dulled over the distal portions of the extremities, but the sensory loss is usually much less marked than the motor loss. Apart from other forms of peripheral neuritis, the condition may simulate Landry's paralysis and acute ascending myelitis at the outset. The peripheral distribution of the symptoms, the disordered sensation, and the presence of facial paralysis are the chief points which would lead to the diagnosis of acute infectious polyneuritis. The cerebro-spinal fluid shows no definite change.

Mr. LEYLAND ROBINSON said that the disease in one of Dr. Johnson's cases might be associated with a transfusion of whole blood which had been carried out for post-partum hæmorrhage two weeks before the onset of the neuritic symptoms. Polyneuritis was recognised as a rare complication of parturition and due to pregnancy toxæmia (pernicious vomiting) or puerperal septicæmia, both of which could be excluded in this patient. The clinical features so closely resembled the type seen in France during the war as to suggest a common ætiology, and although the donor gave no history of neuritis, he had served in France and might be a carrier of the disease. The patient had subsequently become pregnant and had been delivered by Cæsarean section at full term; pregnancy and the puerperium were uneventful.

Mr. G. P. NEWBOLT read a note on four cases of

Intestinal Obstruction Caused by Gall-stones.

Three of the cases were women, all of whom recovered, one case was a male, who died. The symptoms were those of intestinal obstruction. Fæcal vomiting with intermissions was present. Constipation was not absolute and there was not much abdominal distension. The patients were all stout and elderly, one woman weighing 19 st. The chemical examination of the last stone removed was that of a typical gall-stone.

Mr. G. C. E. SIMPSON said that he had seen two cases of this condition, both in women. One, aged 70, died of pneumonia after operation. In the other case gall-stones were diagnosed, but the vomiting passed so insensibly into the vomiting of obstruction that some days were lost; in the latter case on exploration the adhesion of the gall-bladder to the duodenal angle was seen and two stones were felt firmly impacted low down in the common duct. Presumably the fistula first formed in the initial severe attack, the only attack accompanied by jaundice, six months before the big stone passed, and gave rise to obstruction. Operation on the biliary region had not yet been undertaken.

Dr. C. O. STALLYBRASS read a paper * on the recent outbreak of

Encephalitis Lethargica.

Having referred to the past history of the disease, he stated that whilst it was not new its pandemic extension was a new feature. As the disease spread there had been observed in France, Italy, &c., a tendency to evolve from a type presenting depression of function to one exhibiting exaltation of function; instead of palsies, lethargy, and somnolence, there were involuntary movements, delirium, and sleeplessness. In Liverpool, in 1921, 81 per cent. of the cases were of the first type. In the winter 1922–23 a considerable outbreak involving over 100 cases occurred and only 52 per cent. were of the first type. The delirium was usually occupational. Alteration in type was accompanied by increased fatality as well in the lethargic as in the over-active type; age-incidence was identical in both types. A definite history of contact with a preceding case was found in 9 per cent. of the cases. Dr. Stallybrass described four abortive cases. The virus he regarded as a variable one, which at times exhibited marked malignancy and increased pathogenicity, as at Derby, Rudduvoorde, and, probably, at Mülheim.

Dr. A. G. GULLAN stated that he had first seen cases of encephalitis lethargica at the end of 1919, when they were of the lethargic type, and though they were not paralysed the patients lay motionless in bed, were only roused with difficulty, and spoke in a monotonous, toneless voice. The only interest the patients took was, that in a feeble voice, they asked "whether they were going to recover." He agreed that the expressionless face was the most characteristic symptom of the disease, both in the lethargic and in the restless varieties. In 1922 he saw a considerable number of cases of the excited form in which choreic movements, wakefulness, and in some instances occupational delirium were present. Dr. Gullan stated that his mortality was considerably lower than that given for the whole of Liverpool; at the present time he had a case of the lethargic type in his wards which gave a previous history of trauma.

* See also THE LANCET, Oct. 27th, p. 922.

Reviews and Notices of Books.

PATHOLOGICAL PHYSIOLOGY OF INTERNAL DISEASES. By ALBION WALTER HEWLETT, M.D., B.S., Professor of Medicine, Stanford Medical School. London and New York: D. Appleton and Co. 1923. With 151 illustrations. Pp. 765. 35*s*.

THE proper understanding of the normal functions of the body and of the manner in which they may become deranged in disease is the basis of scientific medicine. To keep abreast of recent work in physiology, biochemistry, immunology, and the like is, however, by no means easy, and implies leisure for reading and access to literature which the general practitioner is rarely fortunate enough to enjoy. Prof. Hewlett's book meets the demand so often expressed for a critical and reliable guide to modern pathological physiology. Dealing with the circulation, digestion, metabolism and its disturbance, fever, the derangement of respiration, renal function, infection, the blood, the nervous system, and the endocrine organs, he describes the functional changes brought about by disease and discusses their causation. He does so in a clear and readable manner, avoiding controversy when possible and presenting a definite point of view. The reader is presented with a clear and concise picture of disease, and an adequate bibliography is appended to each chapter for the benefit of those who may desire to extend their reading to the original sources. As is only to be expected in a subject of such dimensions, certain of the sections are more satisfactory than others, but on the whole the book is well balanced throughout, and may be confidently recommended to students and practitioners alike.

CHRONIC INTESTINAL STASIS—A RADIOLOGICAL STUDY. By ALFRED C. JORDAN, C.B.E., M.D., M.R.C.P. Oxford Medical Publications. London: Henry Frowde and Hodder and Stoughton. 1923. Pp. 230. 25*s*.

ALIMENTARY delay, or constipation in its widest sense, is of immense importance to human well-being, and the radiologist—to whom the viscera are not the sealed book that they are to others—is in a better position than most to make exact observations. In his preface, Dr. Jordan says, "I have attempted to give an ordered account of chronic intestinal stasis. I have found it a difficult task, so interwoven are the effects of stasis. There is unavoidable repetition, and I hope my readers will forgive this, especially as the repetition is more apparent than real and is, in fact, a presentation of the subject from many aspects." To this volume Sir Arbuthnot Lane contributes a

"foreword," so that we know from the start we are reading the work of a follower of the doctrines of Lane. Those who wholeheartedly accept these doctrines will, no doubt, find the study completely satisfying.

Dr. Jordan is safest and best when he is examining the intestinal viscera almost wholly from the point of view of the skilled radiologist. Thus, following his brief summary of the developmental causes of "stasis," he proceeds to deal with the intestinal tract under the chapter headings of the Large Intestine in Chronic Intestinal Stasis; the Pelvic Colon in Stasis; the Peristalsis of the Large Intestine; Colitis; Diverticulitis; the Ileal Kink; Ileal Torsion; the Undescended Cæcum; the Appendix. All of these conditions are well described and appear to the reader to be really close to his subject. A good case is made out for including studies of duodenum and stomach. In regard to cardiospasm, no doubt "stasis" may be one of its causes, although treatment on the lines recommended by the author will, we think, not always be successful. Dr. Jordan would have us believe that chronic intestinal stasis will cause such varied conditions as chronic mastitis, certain forms of blindness, disseminated sclerosis, epilepsy, aortic aneurysm, fibroid phthisis, gall-stones, glycosuria, Dupuytren's contraction, and cancer. Now intestinal disorders are common, while a number of the diseases enumerated are relatively uncommon. Some of the illustrations given are very striking, and the association of two apparently unrelated conditions is often curious and suggestive; but it must be remembered that the citation of a number of cases in which these diseases were present and associated with intestinal derangement is not in itself proof.

Radiological technique has reached a high degree of precision, but even now the illustrations so obtained are difficult to interpret. In spite of the carefully numbered and lettered descriptions, some of them will leave the reader with an open mind. It would, perhaps, be better if in a later edition Dr. Jordan enlarged the book in the direction of making it a complete work on radiological investigation of the intestinal tract alone, or confined it rigidly to advancing proofs of the correctness of Lane's hypothesis. In either sphere his experience would be welcome and carry weight.

EXERCISE IN EDUCATION AND MEDICINE.

Third Edition. By R. TAIT MCKENZIE, M.D., LL.D., late Major, R.A.M.C.; Professor of Physical Education and Director of the Department, University of Pennsylvania. London: W. B. Saunders Company. With 445 illustrations. Pp. 601. 24*s*.

ALL those who are interested in physical work, whether educational or gymnastic, have grown accustomed to look forward to reading anything from the pen of Tait McKenzie. The rare combination of physician, sculptor, and university professor has qualified him to produce a standard work on the subject which he has made particularly his own. The book is divided into two sections, the first of which is devoted to exercises in education, and the second to exercises in medicine. The first part gives a most comprehensive survey of the subject, and deals largely with history, comparing the systems of gymnastic education in vogue in various countries with admirable precision and clearness. It is mainly in these pages that the value of the combination of medical man and sculptor is so clearly shown. It is perhaps unfortunate that more reference has not been made to the attempts that are now being made throughout our national schools to pay serious attention to the physical fitness of the children attending them; for, although the system is still in its infancy, it has made such rapid strides as to be worthy of comment. At the same time, it cannot be denied that the perusal of the account given of educational gymnastics in other countries is, in places, inclined to fill the British reader with an envious admiration. More particularly will this be the case amongst those who have had the opportunity of seeing the author's magnificent work in his own University at Philadelphia.

A glance through the titles of the 17 chapters in this section of the book shows at once its comprehensive scope, since even the physical education of the blind and the deaf-mute is given full consideration. The chapter devoted to the physical education in girls' schools and women's colleges places the pros and cons of this much-debated subject with great clearness, and a careful study of these pages by those who have joined in the acrimonious discussion of this subject would speedily clear the ground for a more ready settlement of divergent views. In the section dealing with exercises in medicine the author changes his rôle from that of the sculptor and scholar to that of the medical practitioner. He has, of course, found it impossible entirely to separate treatment by exercise from treatment by other physical means; and a certain amount of consideration has been devoted to treatment by massage, though other methods, such as electrical treatment, have received but passing mention. One of the outstanding features of treatment by exercises prescribed by the author is the frequency with which his patients are instructed to carry out certain stated movements. Almost the whole field of physical therapeutics is covered by the book. Its title may lead to the impression that it is only intended for the masseur-gymnast and physical-therapist. It is to be hoped that others, too, will study its pages. There can be few medical men who would fail to derive much practical help therefrom in the treatment of patients.

BIOLOGICAL TECHNIQUE.

Handbuch der biologischen Arbeitsmethoden. Herausgegeben von Geh. Med.-Rat. Prof. Dr. EMIL ABDERHALDEN, Direktor des Physiologischen Instituts der Universität Halle a. d. Saale. Abt. IV., Teil 3, Heft 2, Lieferung 106, Blutuntersuchungen. Berlin und Wien: Urban und Schwarzenberg. 1923. Pp. 514.

THIS number of the "Handbuch der biologischen Arbeitsmethoden," now appearing under the editorship of Prof. Abderhalden, will be of particular interest to students of the blood. Each of the seven sections is written by an authority who has himself contributed to the sum of knowledge on his subject, and, in consequence, all contain matter not available in any previous handbooks. But little attention is given to theoretical considerations; the whole purpose of the work is practical, and the details of all the procedures described are fully and clearly set forth. The first two sections will be of least interest to workers in this country; in the former Hamburger, of Groningen, describes an accurate method for estimating the fragility of the red cells, which is undoubtedly a great advance in technique on Widal's original method, but has the disadvantage of requiring rather elaborate specially made apparatus: in the latter Reiss, of Frankfurt-am-Main, describes the newer methods of refractometry of the serum. In the third section Kleinmann, of Berlin, goes very fully into the theory and practice of colorimetry and nephelometry: this is a most valuable contribution. Fahraens, of Stockholm, in the fourth section deals with the suspension stability of the red cells; this subject, interesting though it be academically, offers little promise of useful clinical application, and has attracted little attention in this country. It is interesting to note that the first true observation on this matter was made by an Englishman, or rather Briton—Hewson—who in 1772 demonstrated that the formation of a "buffy coat" depended upon sinking of the red cells before clotting had occurred. The author points out the fact, not usually recognised, that diminution of the suspension stability depends not upon retardation of clot formation, but is due to the clumping of the red cells, the fall of the cells being the more rapid the larger the clumps formed. In the fifth section Degkwitz, of Munich, details a number of procedures applicable to the study of the blood

platelets, and in the sixth and seventh Schelcht, of Duisburg, and Frank and Seeliger, of Breslau, respectively have collected and fully described a large number of histological procedures of the greatest value in the study of the blood and hæmatopoietic systems.

THE EXAMINATION OF PATIENTS.

By NELLIS B. FOSTER, M.D., Assistant Physician to the New York Hospital; Associate Professor of Medicine at Cornell University College of Medicine. London and Philadelphia: W. B. Saunders Company. 1923. Pp. 253. 18s.

Dr. Nellis Foster is familiar to many readers in this country as the author of a number of penetrating studies and illuminating lectures on clinical medicine. His new book will be greatly appreciated by those who prefer an account of the everyday methods of one skilled physician to the generalities of the ordinary text-book. Dr. Foster here records his routine in the examination of patients, and the precision of his writing, the thoroughness of his method, and his critical but sympathetic attitude to recent advances, make his book a most valuable one to all those engaged in general practice. We do, however, feel that the book loses a great deal through the omission to include descriptions of the clinical examination of the blood and lymphatic systems and of the urine. We can imagine the practitioner turning to this volume in a hundred difficult situations, and receiving the greatest service from the author's description of examination of a cardio-vascular, gynæcological, or neurological condition. But should his patient be one with a grave anæmia, or an obscure splenic enlargement, he will not get the same assistance. We hope that future editions may see these omissions corrected.

LOEB CLASSICAL LIBRARY.

Hippocrates. Vol. II. With an English Translation by W. H. S. JONES. London: Heinemann. 1923. Pp. 336. 10s.

A REVIEW of the first volume of this edition of the text, with a translation of the Hippocratic Corpus, appeared in our issue of Sept. 8th. This volume contains the following treatises: Prognostic, Regimen in Acute Diseases, The Sacred Disease, The Art, Breaths, περὶ φυσῶν, Law, Decorum, Physician (Cap. I.), and Dentition. The Introductory Essays contain, amongst others, one upon Ancient Nursing, derived from information contained in the treatises Epidemics, Regimen in Acute Diseases, and Decorum, from which it appears that the nursing was carried out by a pupil—i.e., by someone more or less fully trained. Another essay deals with the subject of Ancient Medical Etiquette, or rather Medical "Good Form," the information being derived from the treatises The Oath, Law, The Physician, Decorum, and Precepts.

Perhaps the most interesting treatise in this volume is that upon The Sacred Disease, which, mutatis mutandis, might have been written by Erasmus. The writer considers that no one disease is more divine than another, "all are divine and all human. Each has a nature and power of its own; none is hopeless or incapable of treatment." The term "Sacred Disease" apparently includes not epilepsy alone but any convulsive affection—e.g., the writer's description of the disease in cattle and goats seems to refer to hydatid of the brain (p. 169). Two other notable treatises are those entitled Law and Decorum. Mr. Jones suggests, with great probability it seems to us, that these two treatises, and possibly Precepts as well, deal with matters discussed and only known to medical men who belonged to a guild or secret society. Thus the last sentence of Law ends as follows: "Holy things are shewn to holy men; to the profane it is not lawful to shew them until these have been initiated into the rites of knowledge." In Precepts V. a genuine physician is called "one made a brother." The expression "Holy things for holy persons" is a common religious formula, and we may point out that it has survived to this day, with a slightly different application, in the Eastern Liturgies, such as those of Chrysostom and Basil, where at the Elevation the priest says: "The Holy things are for the holy" (τὰ ἅγια τοῖς ἁγίοις), while in the West we find the same phrase, "Sancta Sanctis," in the Mozarabic and Gallican Liturgies. Although the latter is not now in use, the former is daily said in the Cathedral of Toledo.

JOURNALS.

BRITISH JOURNAL OF OPHTHALMOLOGY. — The original articles in the October number are physiological. The Blood Pressure in the Eye and its Relation to the Chamber Pressure is the title of an article by Priestley Smith, in which many problems are discussed, such as the self-adjusting equilibrium of pressure inside and outside the retinal veins, the venous pulse and its relation to finger pressure, &c. The author is one whose researches are always valuable. The second article is by H. Herbert on the Pectinate Ligament in its Relation to Chronic Glaucoma. The anatomy of the ciliary region is still a subject about which complete certainty has not yet been established. In this article the scleral spur discovered by Prof. Thomson, of Oxford, on which his "pump action" theory is founded, is criticised as not having been found in the eyes examined by Herbert. According to Herbert there are striking anatomical variations in the mode of attachment of the longitudinal fibres of the ciliary muscles, some types involving a greater predisposition to glaucoma than others.——The November number is a clinical one. The first article by W. Barrie Brownlie and H. Neame calls attention to a risk that attends upon the ordinary operation of advancement of a rectus muscle. A case is given in which an advancement operation was followed in a few months by the appearance of an implantation cyst of the iris and ciliary body. In spite of a large iridectomy, which included all the anterior wall of the cyst, its recurrence was inevitable, and ultimately the eye had to be excised. Such a disaster as this, though of course extremely rare, ought to be a warning to all operators. The position of the cyst, as determined by pathological examination, suggested that the needle carrying one of the sutures was passed too deeply, and traversed the anterior part of the ciliary body at its junction with iris root and pectinate ligament. The advancement operation had not been performed by the author of the article, but he charitably remarks, "Who will say conscientiously that he has never left a suture in the deep ciliary region or even deeper?" A case of cyst of the sclera following upon an advancement operation was reported in 1921 by C. Goulden and M. H. Whiting at a meeting of the Ophthalmological Society, and in the discussion that followed Mr. Cyril Walker spoke of a cyst following an advancement operation which projected both externally and internally. In this case, however, the growth stopped spontaneously. To avert such a disaster as is here narrated it is necessary not only to avoid penetrating too deeply into the sclera with the needle, but also to keep the overlying conjunctiva well out of the way so as to mitigate any risk of it being carried into the wound along with the needle. Sanford R. Gifford writes of intra-cisternal injections in the treatment of luetic atrophy, and J. J. Keegan of the technique and reaction of intracranial bichloride injections. The latter author admits that the constancy and severity of the immediate reaction from the injections make this a rather heroic procedure. Nevertheless, the first author reports improvement of vision in five cases, the best results being obtained in early cases with relatively good central vision, at least in one eye, and with little evidence of other nervous involvement. The fourth article in this number, by A. W. S. Sichel and A. R. Fraser, reports a case of hemianopia as the sole clinical feature in untreated secondary syphilis.

The Medical Clinics of North America are published bi-monthly, and the price of a year's issues, which comprise a complete volume, is 55s.

THE LANCET.

LONDON: SATURDAY, DECEMBER 15, 1923.

ORAL SEPSIS AND CANCER.

IN a recent paper [1] Mr. F. ST. J. STEADMAN has collected a considerable amount of evidence, chiefly indirect, to support the view that prolonged sepsis in the mouth might predispose to cancer of the alimentary canal. He comes to the conclusion that oral sepsis is "one of the commonest, and probably the commonest, predisposing cause of cancer of the alimentary canal and its associated parts." He points out that cancer of the alimentary canal accounted for 63 per cent. of the total mortality from malignant disease in 1901 to 1904. He has examined 204 cases of cancer of the alimentary canal, and found that practically all were suffering from pyorrhœa. As a control an examination of over 800 individuals free from cancer showed that pyorrhœa was present in 88 per cent. Mr. STEADMAN grouped the cases into three categories, according to whether the pyorrhœa was slight, moderate, or severe, and from the figures obtained he has constructed what he terms the "maximum pyorrhœic index." The index figure obtained from examination of the cancer patients was 91·6 per cent., while that of the cancer-free individuals was only 53·3 per cent.

On these data Mr. STEADMAN has come to the conclusion that the majority of persons with cancer of the digestive tract have advanced pyorrhœa, while the latter is less common in persons free from cancer. Mr. STEADMAN has quoted statistics from the Registrar-General's reports; it is a little surprising that he has not grouped the cases of cancer of the alimentary canal according to sex as well as to their anatomical distribution. If this is done we find that although the total number of deaths from cancer of the alimentary canal is approximately equal, though actually greater in the male, yet the deaths from cancer of the buccal cavity are in the proportion of seven to one in males and females. In 1921 the deaths from cancer of the mouth were in males, 1482; in females, 358. The total death-rates from cancer of the mouth in males and females in the ten years from 1911 to 1920 show a similar proportion. If oral sepsis is such a common predisposing cause of cancer, then we might expect its influence to be most marked in the region in which the sepsis occurs. On this hypothesis it appears difficult to account for the comparative rarity of cancer of the mouth in females. Now if it could be shown that pyorrhœa had a sex incidence similar to that of cancer of the mouth it would help Mr. STEADMAN'S views. It is, however, quite certain that pyorrhœa is little, if at all, less frequent in women, though actual statistics do not appear to be available; and it is significant that the deaths from disease of the teeth and gums for 1922 were for males, 156, for females, 149. These figures are difficult to reconcile with Mr. STEADMAN'S conclusions. In cancer of the tongue it is generally supposed that excessive smoking and syphilis play an important rôle and partly explain the preponderance of cancer of the mouth in males; but both of these forms of chronic irritation are certainly less common than pyorrhœa. With regard to gastric ulcer and its relation to cancer of the stomach, Mr. STEADMAN takes it too readily for granted that the ætiology of gastric ulcer is a settled matter. There is considerable diversity of opinion as to whether gastric ulcer is a frequent precursor to cancer of the stomach.

We do not find that the evidence Mr. STEADMAN adduces is sufficient to prove the very definite statement he makes with regard to oral sepsis and cancer of the alimentary canal. Yet it does not follow that pyorrhœa is a negligible factor. It may well be that it acts by influencing other forms of irritation rather than by acting as an independent predisposing cause of cancer. Thus, syphilis or excessive smoking, or both together plus oral sepsis, may represent a degree of irritation far more likely to lead to cancer of the tongue than when oral sepsis is absent. But in his attempt to establish oral sepsis as an important ætiological factor in the incidence of cancer in the alimentary tract generally Mr. STEADMAN appears to have forgotten his 865 control cases which did not have cancer. No less than 88·5 per cent. of these had periodontal disease, and even if we accept his pyorrhœic index 177 of these control cases showed a maximum degree of pyorrhœa. The presence of oral sepsis in the body cannot be other than harmful, but we should need stronger evidence than that put forward to attribute to it such a preponderant rôle in the causation of cancer of the alimentary canal.

[1] Brit. Dent. Jour., Dec. 1st, 1923.

THE COMMERCE OF CURES.

NOVEL cures and fresh theories of the treatment of disease are sometimes received by the daily press and the public with an unguarded enthusiasm which bequeathes a legacy of disappointment to the sufferers who hope to benefit thereby. The great expectations of pathology are not always realised. "I've known over thirty men that found out how to cure consumption" (says the old doctor in Mr. BERNARD SHAW'S play); "why do people go on dying of it?" Even those prospective remedies of which high hopes are justly formed may require a protracted period of proof or preparation before they are available for the ordinary patient. The Spahlinger treatment for tuberculosis seems to be passing through this stage. Phthisical patients anxious to undergo this treatment are, it is said, informed that if they will subscribe a thousand pounds towards the cost of the remedy, or will take up a thousand pounds' worth of shares in the undertaking, all facilities for a cure will be forthcoming.

Exactly in what terms or circumstances or upon what authority any such proposal may have been made, we are not concerned to discuss. If the suggestion be unfounded, it still has an abstract interest for the medical profession. If a patient asked whether he should undergo such a treatment on such a condition, what advice should a doctor give? The Spahlinger system makes confident claims to success. A thousand pounds would not be an excessive price for the cure of tuberculosis. Statements have been made in Parliament which throw light on the present position. During the debate on the Appropriation Bill last August a critic of the Government and an advocate of the Spahlinger system mentioned that the undertaking was in

financial difficulties, with liabilities of £100,000, and that the Ministry of Health had been pressed to find that sum and to guarantee £10,000 a year for three years. The official reply was that the Ministry was satisfied that there was a prima facie case for such further inquiry into the Spahlinger treatment as would enable medical authorities and the world in general to form a definite and final opinion as to its efficacy. It was suggested that Mr. SPAHLINGER should take an early opportunity of making a full statement of his process and results to a body competent to pass expert judgment on them. Last year, it was stated, the Ministry sent a specially qualified officer to Switzerland to acquaint himself with the treatment. Subsequently, in August, 1922, the Ministry made a proposal to Mr. SPAHLINGER which was unacceptable to him. Arrangements made between him and the Red Cross Society also broke down. Further negotiations between him and the Ministry had lately taken place. There, it seems, until financial assistance be forthcoming from private sources, the matter at present rests. The Ministry of Health can hardly be blamed for adhering to the official view that public funds cannot be embarked except upon the basis of adequate information and reasonable security.

It may be safely stated as a general proposition that professional opinion deprecates the association of therapeutic agents with such extraneous elememts as secrecy, guaranteed cures, newspaper campaigns, and company flotation. Apart from these considerations, however, neither ethics nor professional etiquette can qualify the obvious fact that if an expensive form of treatment is not yet commercially developed, the cost of applying it must be very high. The cost of remedies has sometimes been cheapened and production has been facilitated by the generosity of a rich benefactor or by means of a grant from public funds, and it is just as laudable, and certainly as practical, to subscribe to the development and application of a particular remedy as to subscribe to research in general. But with regard to the individual patient, it seems to us that the proposition turns on the answer to the question, "Has Mr. SPAHLINGER yet produced an agent which enables us to tell a patient that the payment of a definite sum will produce a definite benefit for himself?" Until any therapeutic agent, however promising, has reached such a stage, we are surely unjustified in promoting research on its behalf by appealing to the hopes or fears of the class of patient whom it is seeking to relieve. Should Mr. SPAHLINGER offer to treat a patient there is nothing in our law to prevent his asking whatever fee he cares to name; but he has no moral right to appeal to the sick to aid him in research, nor have those who support his demand any right to claim subsequent priority of treatment.

THE SURGERY OF THE SYMPATHETIC.

THE working of the organs of internal secretion is intimately bound up with the activity of the vegetative nervous system, and with the increasing study devoted to endocrine function it is not surprising that a great deal of attention has been directed to the physiology of the autonomic nerves. So that a real surgery of the sympathetic system has grown up. A few weeks ago the work of LERICHE on the effects of arterial decortication was reviewed,[1] and the conclusion arrived at that an extended investigation of this method of treatment is necessary before any satisfactory evaluation can be made. The perusal of a striking monograph[2] just published by Prof. THOMAS JONNESCO, of Vienna, on the surgery of the cervico-thoracic sympathetic, leads to the belief that this branch of the subject should also be very carefully considered and the possibilities of the operation therein described be further explored.

Briefly, Prof. JONNESCO recommends complete excision of the cervical sympathetic with extirpation of the stellate ganglion for exophthalmic goitre, angina pectoris, migraine, epilepsy, trigeminal neuralgia, and glaucoma. The arguments for a sympathetic origin of the symptoms of exophthalmic goitre are well set forth. It is held that whatever may be the beginnings of this obscure disease, certainly the symptoms are perpetuated by overactivity of the cervical sympathetic. The extirpation of this cord then is the logical procedure. JABOULAY was the first to operate upon the sympathetic for Graves's disease, but his operation soon fell into disrepute because it was found to be ineffective. This failure Prof. JONNESCO holds to be due to the fact that the superior ganglion only was destroyed, whereas many fibres reach the gland from the lower part of the cord. The cases described and illustrated by Prof. JONNESCO are very striking. He has operated upon 50 cases with four deaths. The immediate result in all the other cases was a very pronounced amelioration of the symptoms; and that the relief was permanent he was able to establish in the 14 cases which he was able to trace. The experiments of CANNON in 1915, who anastomosed the peripheral end of the cut phrenic nerve to the cervical sympathetic and was able to obtain certain of the symptoms of Graves's disease, demonstrated the important influence exerted by nerve impulses upon the thyroid, whilst REINHARD[3] has shown how chronic irritation of one cervical sympathetic led to hypertrophy of the corresponding lobe of the gland. The latter observer also has obtained very good results from JONNESCO's operation in eight cases. The technique itself demands a rather delicate dissection. It is illustrated by many beautiful plates in Prof. JONNESCO's monograph. In these the spinal accessory nerve is shown divided in every case, though in the text the author says he avoids it. Injury to this nerve would be a serious drawback to the procedure. A still more interesting section is that which deals with angina pectoris. The operation of sympathectomy, dividing as it does all the cardiac nerves, breaks the afferent path by which the crises are precipitated. In four cases the results were extremely good. W. B. COFFEY and P. K. BAIN[4] have recently reported their results of a more limited operation on the sympathetic for angina. In two of their patients complete freedom from attacks resulted, whilst in the others there was considerable relief. The efficacy of JONNESCO's operation in migraine, trigeminal neuralgia, and epilepsy is by no means established, whilst in glaucoma it would seem to be definitely contra-indicated.

Undoubtedly extirpation of the cervical sympathetic cord needs further study, and its main field of usefulness may prove to be the alleviation of suffering in angina pectoris.

[1] THE LANCET, Nov. 17th, p. 1096.

[2] Le sympathique cervico-thoracique. Paris: Masson et Cie. 1923. Pp. 92, with plates. Fr.42.

[3] Deut. Zeitschr. f. Chir., 1923, clxxx., 170–177.

[4] Archiv. Int. Med., 1923, xxxi., 200.

Annotations.

"Ne quid nimis."

PANEL INQUIRY: TERMS OF REFERENCE.

THE Minister of Health has approved the following terms of reference for the Court of Inquiry set up in connexion with the terms of remuneration for the insurance medical service after Jan. 1st, 1924:—

"To inquire and report to His Majesty's Government what should be the amount of the capitation fee (per insured person per annum) on the basis of which the Central Practitioners Fund under Article 19 of the National Health Insurance (Medical Benefit) Regulations, 1924, should be calculated as from Jan. 1st, 1924, so as to afford adequate remuneration for the time and service to be given by general practitioners under the conditions set out in those Regulations, in connexion with the medical attendance and treatment of insured persons, due regard being had to the service in fact rendered under the Regulations hitherto in force. This capitation fee is not to include any payment in respect of the supply of drugs and appliances (such payments being made out of the Drug Fund under Article 24 of the Regulations), or any payments to meet the special conditions of practice in rural and semi-rural areas."

It will be remembered that the personnel of the Court of Inquiry consists of Mr. T. R. Hughes, K.C., Mr. F. S. Goodenough, and Sir Josiah Stamp.

TRANSMISSION OF LEPROSY FROM RAT TO MAN.

IN a paper in *Paris Médical* for Oct. 27th Prof. E. Marchoux, of the Pasteur Institute, discusses the possibility of the transmission of leprosy from the rat to man in connexion with a most instructive case. It was that of a man who, since 1910, had been treated in France and England for leprosy, and who finally drifted into the Pasteur Hospital under the care of Dr. Veillon. Superficially, the disease was limited to the limbs and face, where there were numerous brown patches. No cutaneous sensory disturbances were noted, but periodic pemphigoid eruptions had given rise to small round ulcers which had been slow to heal. There were numerous scars resulting from the slow healing of these ulcers, and when their surface or the nasal mucous membrane was lightly scraped and the substance thus obtained was examined under the microscope numerous fine, short, cocciform bacilli were seen, to which Prof. Marchoux has provisionally given the name *Mycobacterium pulviforme*. After the patient's death these organisms were found in great quantities in the skin, lymphatic glands, liver, and spleen; in the last-named organ they were particularly numerous. Rabbits, guinea-pigs, and rats were inoculated from this spleen, and whereas the rabbits and guinea-pigs were unaffected five of the six rats contracted a disease closely similar to, if not actually identical with, rat leprosy—a disease discovered in 1905 by Stefansky in sewer rats. Prof. Marchoux has worked with his virus since 1921; it is now in its fourth passage through rats, and the morbid changes evoked have shown no macroscopic or microscopic deviation from the changes associated with spontaneous rat leprosy. It would seem that the relation of rat leprosy to human leprosy may be somewhat similar to that of bovine to human tuberculosis; the micro-organism of rat leprosy may not find the human body congenial soil except under most rare conditions. Rat leprosy, by the way, would seem to be a comparatively common disease in the sewers of Paris, and it has been calculated that 0·6 per cent. of the Parisian sewer rats are definitely leprous, and that about 5 per cent. are infected to such a limited extent that the disease can only be detected post mortem. This is a point which Prof. Marchoux includes among the many parallels he draws between the leprosy of rats and man. For in man, too, the disease may be limited to the lymphatic glands, and in the French colonies the bacillus of leprosy has sometimes been found in the lymphatic glands of apparently healthy persons living in contact with definite cases of leprosy. Hitherto experimental cultivation of Hansen's bacillus has seldom, if ever, been successful, but the recent researches of Prof. Marchoux suggest that the anaerobic properties of the lepra bacillus are largely responsible for cultural failures in the past, and that future progress in this direction will depend on appreciation of this fact.

THE LEUCOCYTES IN MEASLES AND SCARLET FEVER.

Dr. H. K. Von Winterfeld and Dr. E. Hahne,[1] of the Rostock University Medical Clinic, examined the blood in 28 cases of measles and seven of scarlet fever, with the following results. In only two cases of measles was there absolute leucopenia (below 4000 leucocytes); normal leucocyte values (4000–8000) were found in 18 cases, and leucocytosis (8000–20,000) in four cases. In other words, the great majority of the cases showed normal leucocyte values, leucopenia was rare, and leucocytosis occurred only in complicated cases. As regards the differential count, of 25 cases of measles investigated 20 per cent. showed lymphopenia (below 20 per cent.), 28 per cent. normal lymphocyte values (21 to 29 per cent.), and 52 per cent. lymphocytosis (over 30 per cent.). Complete absence of eosinophils was found in 24 per cent., normal eosinophil values (1 to 3 per cent.) in 56 per cent., and eosinophilia (4 to 9 per cent.) in 20 per cent. The writers conclude that while the leucocyte values are not characteristic in measles, the presence of leucocytosis in uncomplicated cases contra-indicates measles, and lymphocytosis, as a general rule, is in favour of the diagnosis of measles. While the behaviour of the eosinophils is not characteristic in measles, high values are rare, and the possibility of their being due to intestinal parasites should be borne in mind, especially in children. In almost all the cases of scarlet fever there were leucocytosis associated with lymphopenia and a distinct eosinophilia during the eruptive stage. The eosinophilia persisted well into convalescence, so that in doubtful cases with indefinite desquamation without a history of a rash the combination of desquamation and eosinophilia justified a diagnosis of *scarlatina sine eruptione*. The writers' conclusions as regards the blood picture in scarlet fever are as follows: (1) Leucocytosis points to scarlet fever and against measles. (2) Lymphocytosis points to measles and against scarlet fever. (3) High eosinophilia points to scarlet fever, especially in convalescence, while normal eosinophil values do not exclude measles. (4) The leucocyte picture is of considerable value in the differential diagnosis between scarlet fever and measles, especially as the other signs supposed to be pathognomonic of measles, such as Koplik's spots and the diazo-reaction were frequently absent in the writers' cases.

MODERN MEDICINE IN ICELAND.

THE conception of Iceland as a centre of medical science may seem a little startling, for we have been taught to associate this country with volcanoes, fogs, and ice rather than with the modern laboratory and hospital. But a jubilee number of *Laeknabladid*, which celebrates the sixtieth birthday of Prof. G. Magnusson, and which contains 12 original articles, shows that Iceland is not only in close touch with the outside world of medicine, but is also in the van of research. A paper by Dr. A. Arnason deals with the notifications of tuberculosis in a country district in the period 1890–1922, and the earlier date shows that, in the matter of notification, Iceland has been no laggard in the administrative control of tuberculosis. Approximately a quarter of the 102 tuberculous patients had tuberculous parents, and the majority

[1] Klinische Wochenschrift, Oct. 22nd, 1923.

had tuberculous brothers or sisters. One-half of the married tuberculous patients had children suffering from the same disease, but among the 30 married patients there was only one instance of tuberculosis in both husband and wife. At Dr. Arnason's instigation, a veterinary surgeon tested with tuberculin all the cattle (80 to 90) in a parish where the disease was most prevalent, but in no case was a positive reaction obtained. In an anthropological paper by Dr. G. Hannesson, who has carried out certain measurements of 844 Icelanders between the ages of 20 and 40, it is pointed out that the Icelanders are among the tallest people in Europe. All the hardships, poverty, bad housing, and the like, "which we have suffered ever since the country was first inhabited, have not been able to lower our stature. After a thousand years of adversities in darkness and cold on the verge of the Arctic zone the Nordic race still carries its head high and claims kinship with its neighbours on the eastern side of the ocean." A paper on 66 cases of placenta prævia by Dr. G. Thoroddsen is followed by a paper by Dr. G. Claessen on radiography. In a paper by Dr. G. Porsteinsson an account is given of 11 patients suffering from echinococcus of the liver. This would seem to be a common complaint in Iceland, and in another paper on the same subject by Dr. M. Einarsson it is pointed out that echinococcosis is fast disappearing in Iceland, and that for every 100 cases occurring 60 years ago there are now only 15. But there is evidently still much room for improvement, for in the period 1905–1923 he operated on 134 cases. A short paper on leprosy by Dr. S. Bjarnhjedinsson brings out the point that perforation of the palate is not a rare sequel to this disease. A paper by Dr. P. Sveinsson is a plea for influencing the subconscious mind of lunatics and habitual drunkards by means of fasting and drinking hot water, which cause the mind to concentrate on the sensation of hunger, diverting it from morbid notions and the craving for alcohol. This symposium of Icelandic medicine is highly creditable to its authors.

BONE NECROSIS AFTER AVULSION OF THE SCALP.

Dr. Erich Düttmann,[1] of Giessen, reports the case of a child aged 9, who was brought into the hospital with the history that eight days previously she had caught her hair in a machine in her father's mill, with the result that the whole scalp, together with the right ear muscles, were torn off. She was dressed by a doctor with trypaflavine, and this dressing was left in place until she was sent to the hospital. The case is reported to illustrate two methods of treating the necrosis that followed. A month after admission patches of granulations were present, but most of the cranium was uncovered by periosteum and necrosed. As the general condition of the child was very poor, and she complained of severe headache, it was determined to operate. On the left side the necrosed bone was removed with a flat chisel until bleeding points were reached, while on the right side multiple fine holes of 2 mm. diameter were drilled into the bone at a distance of 0·5 cm. from each other until bleeding occurred, care being taken not to injure the dura. Fourteen days later the chiselled portion was almost completely covered with healthy granulations, while on the opposite side granulations were only just beginning to appear out of the drill holes. As the child still complained of headache, and the bone between the holes was very tender, the remainder of the necrosed bone was removed with a chisel five days later. The spongiosa was found infiltrated with pus. After a somewhat stormy course, during which multiple small sequestra were extruded from the drilled side, the skull was eventually covered with granulations in about six weeks, and Thiersch's skin-grafting was performed. The child was discharged with the head finally covered with healthy skin about seven months after admission. In discussing the course of the case, Dr. Düttmann expresses the opinion that the trypaflavine was a contributing cause of the extensive necrosis, and quotes observations that have been made to show the destruction of tissue caused by that substance. The experiment of treating part of the necrosed area with removal by chiselling and part with drilling holes is instructive. The operation of chiselling was easy to carry out and relatively without danger to the patient, and the result in this case was perfect, whereas on the drilled side the procedure was difficult, it took much longer, and there was great danger of boring through the skull and of injuring the dura. The granulations which grew in the drill holes appeared to block the exit of pus from the spongiosa, and convalescence was delayed by the frequent extrusion of sequestra. Dr. Düttmann strongly advises against the method of drilling.

[1] Deutsche med. Wochenschrift, Nov. 16th, 1923.

PNEUMOCOCCAL MYELITIS.

IN referring last week to the work of the Institut Pasteur on lesions of the nervous system, we called attention to the possibility that certain cases of myelitis might prove to be of infectious origin. In his inaugural thesis Dr. Moïse Zissu[1] considers pneumococcal myelitis, of which he has collected 19 examples from the literature, including two original cases observed in Dr. Lemierre's service at the Andral Hospital, Paris. As regards the ætiology, age plays an important part, for of the 19 cases 13 occurred in adults, three in children, two in adolescents, and one in an old man; 15 were in males and four in females. The attack of pneumonia was severe in the majority of cases. Like the other extra-pulmonary localisations of pneumococcal infection pneumococcal myelitis may precede the pneumonia, develop simultaneously with it, occur at the height of the disease, or first appear in convalescence several days after the crisis. No examples have hitherto been recorded of the occurrence of pneumococcal myelitis, apart from a pulmonary localisation of the infection. Dr. Zissu has drawn up the following classification of the clinical forms of pneumococcal myelitis: (1) Circumscribed lumbo-sacral myelitis, of which there is a mild and a severe form, characterised by paraplegia, sensory and sphincter disturbances, and loss or exaggeration of the tendon and cutaneous reflexes. (2) Disseminated myelitis, in which in addition to the above symptoms there is paralysis in the upper limbs. (3) Meningomyelitis, in which the symptoms of myelitis are associated with signs of meningeal irritation. (4) Poliomyelitis manifested by paralysis and muscular atrophy of the lower limbs. (5) Acute ascending paralysis with or without sensory and sphincter disturbances. (6) Diffuse chronic myelitis, with paresis of all four limbs, contractures, exaggeration of the reflexes and muscular atrophy. Pneumococcal myelitis, though a serious condition, is not so fatal as other forms of infective myelitis. Nine of the 19 cases recovered, and ten died after an illness ranging from five to 25 days.

[1] Thèse de Paris, 1923, No. 91.

TOMARKIN'S "ANTIMICROBUM."

SOME rather remarkable statistics have recently been published in Italy[2] on the results of treatment of acute pneumonia by a chemical compound produced by Dr. Leandro Tomarkin. The therapeutical product obtained by chemical synthesis, and called "antimicrobum," has a definite composition which is indicated by the name amino-orthobenzoyl-sulpho-isoamylo-hydrocupro-nuclein-formate of soda, and is prepared in two forms, monobasic and bibasic. Both of these are in the form of a greyish-brown powder. The bibasic combination is readily soluble in cold water, sparingly so in alcohol, and insoluble in ether. It is decomposed at a temperature of 50° C., and when heated to 70° C. gives off irritating gases. The mono-

[2] Rivista Ospedaliera, August 15th, 1923. Via Ludovisi, Rome.

basic form is insoluble in cold water, ether, and alcohol, and only slightly soluble in warm water. It also decomposes at 70° C. Twenty-five cases of pneumonia, chiefly lobar, treated in the San-Spirito Hospital at Rome during March, April, and May by antimicrobum, gave a mortality of only 4 per cent., whereas 50 patients treated during the same period with the usual symptomatic treatment showed a mortality of 40 per cent. In other wards of the same hospital the mortality was 55 per cent. and 38 per cent. with the usual symptomatic treatment. All forms treated with antimicrobum therapy were favourably influenced by it. The cases included several of exceptional severity, some bilateral with effusion. Usually resolution, either by lysis or crisis, was rapid and the disease presented a very mild course in nearly all cases, complications being rare. The drug appears to have been well tolerated in all cases, and its effect is explained as a combination of antitoxic and anti-pyogenous action, causing a biological transformation of the products of bacterial scission (endotoxins) and decomposing the bacterial toxins by precipitating the nucleo-albumin and altering their physical and biochemical properties so as to render them easily eliminable. It has, moreover, a marked phagocytic action, causing hyperleucocytosis of preponderating mononuclear type, thus mobilising the defensive bodies of the organism. The action of the bibasic combination is mainly antitoxic, while that of the monobasic is specifically bactericidal. This circumstance determines special methods for its administration. Whenever the treatment of pneumonia is commenced early—viz., on the first or second day, when the general toxic symptoms are not as yet much developed—one gelatin capsule of the monobasic antimicrobum is given every two hours. After two days the bibasic combination is given until resolution takes place. Should the treatment be delayed to a later period when general toxic symptoms are manifest, treatment should begin by giving the bibasic combination for one day, followed by the monobasic during the second day, after which the former will be resumed for at least 8–10 days, diminishing the dose by one capsule daily. It would seem that, having regard to the greatly reduced mortality in the observations recorded, compared with other methods of treatment, antimicrobum Tomarkin may prove to be an efficacious remedy for pneumonia, and one simple to administer. Other observations will naturally be required to establish its claims, and arrangements have been made to secure a supply of the drug from Italy for use in the Italian Hospital in London. The results of treatment there will be watched with interest.

A REMARKABLE TERATOMA.

WE have received from Mr. E. J. Harrison the report of an extraordinary case. He had obtained it from a paper printed in Russian, which had reprinted it from the *Novoe Vremya*, of Belgrade. The report lacks some of those details which would be supplied in a professional description. It is too long to reproduce here, but the essence of it is that a man of 22 had been troubled for nearly 20 years by an increasing swelling in the left side of his abdomen, and, on being operated upon by Prof. Kostitch, two fœtuses were removed by that surgeon from the swelling; one fœtus, 10 inches long, had a head with hair, short thick body, a left hand and a right leg, and possessed two teeth in its mouth; the other, half the size, was rather more incomplete.

There seems little doubt that the condition should be classed among the teratomata as a twin variety of a remarkably high stage of differentiation. Such growths are to be referred to abnormal development of sex-cells, are well known in the ovary, and not rare among tumours of the testis. The degree of developmental progress seems to be the extraordinary feature in this case. The sex of the possessor of a teratoma is of small importance, as the fact already mentioned about testicular tumours is enough to show. The development of the sex-cell is parthenogenetic in that there has not been any apparent syngamy, but a cell is not the less "fertile" because it develops parthenogenetically. It has been found that normal parthenogenesis, such as occurs in some of the crustacea, is autogamous, coming into operation as the result of self-fertilisation by the second polar globule. This is a secondary acquisition, but there can be little doubt that parthenogenesis, using the term in a wide sense, is a faculty inherent in the earliest and most primitive cells; it probably dies out, but it is frequently capable of being waked up before its decease. In this connexion there is an interesting possibility. Among vertebrates in general, at any rate above the cyclostomes, there seems to be a double production of gonocytes not immediately related to one another. The first formation occurs in association with the alimentary tract, and the gonocytes formed here migrate along the mesentery, to reach finally the genital ridges. Many of them disintegrate on the way, and many more seem to miss their goal, and settle down and die in other parts. The relatively few cells that reach the gonad lose their characters and, for the first time, begin to divide. At the same time, the epithelial cells covering the ridge begin to divide rapidly, thus giving rise to the cells of the second batch of gonocytes, among which are the scattered remnants of the first batch. What the difference is, if any, in the final destiny of these two groups of cells remains to be shown. Definite proof of the occurrence of two such batches of gonocytes in man and higher mammals is lacking, but certain observations point towards its truth.

The meaning of such a process is very obscure, but it seems likely that the cells of the first efflorescence are more primitive than the others, and it is at least permissible to speculate on the possibility of their possession of parthenogenetic potentialities. It may be remarked incidentally that they have been seen to exhibit some of the early nuclear phases of maturation-division before degenerating. If gonocytes of the first order are assumed to be more likely to retain parthenogenetic leanings than those of the second, it would seem to be suggested that teratomata might owe their origin most frequently to a gonocyte of the first batch that ought to have disappeared. Such a view, highly theoretical as it is, would at all events give some explanation of extra-genital teratomata, such as the Belgrade case seems to have been. In the absence of an expert report we cannot say where the seat of the tumour may have been, but we are not debarred from hazarding a guess, that it was associated with the original median mesentery or dorsal wall of the cœlomic cavity originally close to this.

KERATODERMA PUNCTATUM.

ACCORDING to Dr. S. E. Sweitzer,[1] of Minneapolis, who recently reported a case at the forty-sixth annual meeting of the American Dermatological Association, keratoderma punctatum, or punctate hyperkeratosis, of the palms and soles is a rare condition, of which he has found only 18 examples on record. The earliest case appears to be that reported in 1879 by Davies-Colley, who described under the name of "disseminated clavus of hands and feet" a condition of hyperkeratotic lesions on the palms and soles, the lesions being very small and showing cupping or pitting in the centre. In making a diagnosis, clavus, psoriasis, porokeratosis Mibelli, and angiokeratoma must be excluded. The late Sir James Galloway pointed out that a punctate keratosis of the palms and soles might occur in lichen planus, arsenical keratosis, syphilis, keratosis follicularis, linear nævus, and in association with verrucæ planæ. The true keratoderma punctatum does not show a generalised hyperkeratosis, nor any erythema at the edges of the lesions. Several of the cases on record, like that described by Dr. Sweitzer, have a hereditary tendency. Dr. Sweitzer's case occurred in a woman, aged 33, in whom the condition had started in early childhood. The father and one brother were similarly affected. The skin over the

[1] Archives of Dermatology and Syphilology, November, 1923.

general body surface was normal, only the palms and soles being affected. The lesions, which were small, horny, and papular and of a light-yellow colour, and showed slight pitting, were distributed over the thenar eminences, the palms, and palmar surface of the fingers. The soles showed a few scattered lesions on the big toe and ball of the foot. The arch of the foot was comparatively free, except towards the heel, which was studded with small horny yellowish lesions, most of which showed a central depression. Microscopical examination of a punctate lesion removed with a biopsy punch showed that the chief changes were in the horny layer, which was greatly increased in a circumscribed manner without any change in structure. There was no inflammatory infiltration in the corium.

QUOTA OF DOCTORS IN SOUTH AFRICA.

CONSIDERABLE resentment appears to have been caused in medical circles on the Witwatersrand by the appearance in the *Rand Daily Mail* of Nov. 15th of an interview with "a well-known medical man," who is alleged to have said that South Africa could do with five times the number of doctors she has at present—that is, with 10,000 instead of under 2000. In the dorps and villages, so it ran, wealthy practices are crying out for medical assistance, and many places which to-day carry only one medical practitioner could easily support three or four more, and provide them with a fair livelihood. The Witwatersrand Branch of the British Medical Association, whose regular monthly meeting happened to be held on the very day the article was published, took immediate action to prevent these statements gaining credence by passing the following resolution:—

That the statement attributed to a "leading medical man" published in the *Rand Daily Mail* on Nov. 15th to the effect that South Africa can find remunerative openings for 8000 medical practitioners, is incorrect, misleading, and calculated to do a great deal of harm by encouraging immigration to this country of medical men from overseas, and by encouraging an unnecessarily large number of men in this country to take up the study of medicine. It is the opinion of this branch that South Africa is not at present in a position adequately to support more than the approximately 1800 practitioners it already has, and that, as a matter of fact, many well qualified and competent medical men in South Africa even now find great difficulty in making both ends meet.

A few days after this a letter, published by the journal which first gave prominence to the subject, effectually disposed of any arguments supporting a theory of shortage of doctors in South Africa. This letter was signed by Dr. A. J. Orenstein, who is entitled to speak with some authority on the medical situation in South Africa. He points out that there are in South Africa some 1,700,000 whites and 6,500,000 natives. Most of the natives live in kraals and are semi-savage. Their earning power—expressed in cash—is very low. Their ability to pay for medical attendance is practically nil. The ability of the native population to support medical men in private practice can be considered as negligible. Native medical services have to be provided by the Government, and it will be long before any government is able to provide a greatly increased medical service for natives. The European population of South Africa practically unaided now supports some 1800 practitioners, either directly or indirectly. There is to-day in South Africa one medical man per 1000 Europeans, compared with England 1 to 1000; Germany 1 to 1940; Austria 1 to 2120; France 1 to 2834 (pre-war figures). Dr. Orenstein's considered view amounts clearly to this: that for many years to come South Africa will not be in a position to support more than approximately the 1800 medical men it has now, and medical schools and parents would do well to bear this fact in mind. People in large centres of population are apt to be blinded to the true condition of affairs by observing a few prosperous medical men in their midst. The bulk of the medical men in South Africa earn but a bare living. An advertisement in that country for a full-time medical man at a salary of a thousand or thereabouts brings scores of eager applicants. Would that be the case, asks Dr. Orenstein, if this country had only one-quarter the medical men it actually requires?

We sympathise with the anxiety of medical men in South Africa to prevent further congestion in a professional community which already meets the effective demand, but when we read carefully the article which caused this anxiety we are inclined to doubt whether it is likely to mislead the public. More than two-thirds of its contents are filled with eulogies of the medical school of the Witwatersrand University, and reads more like a patriotic appeal for support of this school than a serious attempt to induce British medical men to come to South Africa in search of an easy livelihood. At any rate, the prompt disclaimers from authoritative sources carry conviction and will prevent men from going to South Africa in the hope of readily establishing a lucrative practice.

THE ANNUAL DINNER OF THE ROYAL SOCIETY OF MEDICINE.

OVER 500 Fellows and Members of the Royal Society of Medicine, out of a roll of 4000 or so, dined together at the Hotel Victoria, Northumberland-avenue, on Tuesday, Dec. 11th. Sir William Hale-White was in the chair, and opportunity was taken to welcome H.R.H. the Prince of Wales as newly elected Honorary Fellow of the Society. Vice-chairmen were the principal office-bearers of the Society along with the representatives of various Sections—namely: Mr. Douglas Gabell (Odontology), Dr. R. J. Reece (Epidemiology), Mr. C. A. R. Nitch (Surgery), Dr. Farquhar Buzzard (Hon. Treas.), Dr. A. M. H. Gray (Hon. Sec.), Sir John MacAlister (Secretary), Mr. W. Girling Ball (Hon. Sec.), Mr. C. H. Fagge (Hon. Treas.), Dr. Robert Hutchison (Medicine), Dr. Cuthbert Lockyer (Obstetrics), Mr. H. J. Banks-Davis (Laryngology), and Sir Layton Blenkinsop (Comparative Medicine). The official guests were the Archbishop of Canterbury, Viscount Haldane, and the Minister of Health. After the loyal toasts had been honoured, the Prince proposed the Royal Society of Medicine. Following the advice of Sir Benjamin Brodie "to abstain from medical politics" he spoke of the merciless law of survival of the fittest in its application to learned bodies and gracefully acknowledged the privilege of belonging to a Society with such an old and honourable tradition. He paid a tribute to the energy and perseverance of Sir John MacAlister in building up the constituent units of the Society into a united whole. Sir William Hale-White, in responding, enumerated the evidences of active life in the Society, the library of which now numbered 120,000 volumes and sent out yearly 3000 parcels of books to Fellows in the country or abroad. The collection of over 4000 medical prints, remounted and catalogued by Dr. Arnold Chaplin, would, he said, soon be accessible for reference. In two directions new ground was being broken: combined meetings of allied Sections and meetings of the whole Society were being arranged for the discussion of topics of more than sectional interest; and a new and active Section of Comparative Medicine had been founded under the presidency of Sir Clifford Allbutt. The toast of "The Guests" was proposed in a racy speech by Dr. Herbert Williamson, to which Lord Haldane and Sir William Joynson-Hicks responded. The latter voiced his satisfaction at the fact that medicine was broadening its scope to take in the diseases of animals. He hoped that help might speedily be given him to deal with the problem of foot-and-mouth disease. The country was paying £70,000 a day for the slaughter of affected animals and a Cabinet Committee had been appointed that very day to consider the very serious situation. A programme of music was provided by Mons. Dore's orchestra, and the success of the evening was largely ascribed to the arrangements made by Mr. Girling Ball.

Modern Technique in Treatment.

A Series of Special Articles, contributed by invitation, on the Treatment of Medical and Surgical Conditions.

XLIX.—THE TREATMENT OF PROLAPSE.

PROLAPSE is a comprehensive term which covers a variety of lesions differing in their ætiology and pathology. Before its treatment is attempted the practitioner must satisfy himself by careful local examination, vaginal, and also rectal and vesical if necessary, not only that he is actually dealing with a case of prolapse, but which of the following conditions are present:—

(*a*) The anterior wall of the vagina may have prolapsed with bladder (cystocele), or urethra (urethrocele), or both, the uterus itself occupying its normal position. The displacement implies stretching or atrophy of the muscular sheet and fascia supporting the bladder and vaginal wall.

(*b*) The uterus may be retroverted and displaced from above downwards on expulsive effort, owing to relaxation of its parametric supports. This displacement is usually complicated by cystocele. It is important to distinguish between a uterus which is merely retroverted and a uterus which is retroverted and also descends.

(*c*) The vagina may be completely everted, a further stage of (*b*). Complete uterine prolapse or "procidentia" is a hernia through the pelvic floor, facilitated by stretching or atrophy of the muscle in the uterine parametria. The sac of the hernia is constituted by the vaginal walls and the contents by the uterus and its appendages. The anterior vaginal wall contains the prolapsed bladder. The posterior wall frequently involves prolorgation and descent of Douglas's pouch. The rectum is not prolapsed.

(*d*) The cervix uteri may be elongated, and hypertrophic, either in its vaginal or supra-vaginal portions or both, without any descent of the uterine body. Elongation of the supra-vaginal portion inverts the vagina from above.

(*e*) The posterior vaginal wall may be adherent to the anterior rectal wall, and prolapsed with a pouch of the anal canal as a "rectocele." The uterus itself is not involved.

Various combinations of these pathological lesions co-exist. Backward displacement of the uterus does not signify prolapse unless it is associated with cystocele and descent of the organ on expulsive effort. In nulliparæ practically the only type of prolapse seen is inversion of the vagina from above, with hypertrophic elongation of the supra-vaginal cervix. In some women with very lax tissues, a general downward displacement of the pelvic floor occurs without any dislocation of its individual units. This appears as a general bulging of the perineum upon downward pressure.

The therapeutics of genital prolapse are best considered under the following sections: (1) Prophylactic, (2) operative, and (3) palliative measures.

Prophylactic Treatment.—The great majority of cases of prolapse are attributable to, and the result of, factors intimately bound up with pregnancy and labour. In the first place, pregnancy too often and too frequently repeated is a fertile source of laxity of the parametrium. Involution is not only confined to the uterus, but also involves the muscular fibres of the pelvic parametric tissues. If involution is excessive and the involuntary muscle of the parametria is replaced by fat or fibrous tissue, tone is lost, and the uterus, whether large or small, tends to prolapse. A heavy bulky uterus dragging upon such weakened supports naturally tends to descend more rapidly, although a small organ is not immune. Similarly a constantly distended bladder under the same conditions produces further dislocation and the formation of a cystocele. Numerous pregnancies and the resumption of hard manual work account for much of the prolapse met with in hospital and panel practice.

Another factor is the application of forceps before cervical dilatation is complete. A great deal has recently been said and thought about the use and abuse of the obstetric forceps, and it is not necessary here to labour the point. All that need be said is that if "high" forceps are applied and traction exerted before the passages are sufficiently dilated, so that the uterus as well as the fœtal head is dragged down, that uterus will surely descend in later years. Subsequent involution can never restore to normal a parametrium artificially stretched to such an extent. The tissues of individuals vary considerably. Some are congenitally strong and withstand trauma both natural and artificial; others are congenitally weak and cannot resist even slight stress; others tear easily and do not stretch, and yet others stretch and do not tear. Inasmuch as it is impossible to foretell the type of masonry with which the human frame is constructed, the obstetrician should, whenever possible, apply patience before forceps.

Finally, the influence of sepsis must not be forgotten. An infected perineal laceration, even if the tear subsequently heals satisfactorily, may lead to adhesion between the walls of the vaginal and anal canals. This is the prime factor, if not the only one, in the production of rectocele. The prevention of rectocele therefore lies in the immediate and accurate suture of perineal tears, and the adoption of antiseptic measures. It is impossible to suture a perineum accurately with the patient lying on her left side. She should be placed in the lithotomy position and the laceration thoroughly exposed. The surface is then cleansed, blood-clot removed, and the vaginal edges approximated. Buried sutures are used to draw together the deep perineal tissues, and so form a good pad of tissue between the vaginal and anal canals. This is the important factor in the prevention of subsequent rectocele. Finally, the skin edges of the perineum are brought together, and the whole thoroughly dusted with some antiseptic powder. A shot in the dark with through-and-through silkworm-gut sutures introduced with the patient in the left lateral position is a rough-and-ready method which may or may not produce an "anatomical" perineum. It certainly does not produce a "physiological" perineum, which permits of the rectal wall sliding upon the vagina during defæcation. The lesson to learn from these various observations is that indifferent midwifery to-day may be responsible for the production of prolapse ten years hence.

Operative Treatment. — Within recent years the tendency has been to relegate more and more the treatment of genital prolapse to the surgeon. There is no doubt that the results of modern surgical technique in this connexion, both immediate and remote, are good. Since the anatomy of the pelvic floor and the supporting structures of the female pelvic organs have been better understood, there has been a reversion from the abdominal to the vaginal route. To-day it is regarded as unnecessary and undesirable to attach a uterus that prolapses to the anterior abdominal wall. It can be cured with less risk to the patient by a vaginal operation. Also it is unnecessary and actually wrong to remove a prolapsed uterus "in toto" unless it is also the seat of some disease calling for hysterectomy. The aim of modern plastic vaginal surgery is to build up and consolidate the atrophied or stretched parametrium, and to maintain the prolapsed viscera in their normal positions. In other words treatment is conservative, and aims at a *restitutio ad integrum* rather than mutilation or the substitution of one disability for another. The older colporrhaphies failed because they were incomplete. The supporting structures of the pelvic viscera were not understood, and false reliance was placed upon the vaginal walls rather than on the underlying parametria and pelvic floor. By adopting the technique described by Fothergill, the "buttress" method of Blair Bell, or the extensive colpo-perineorrhaphy of Archibald Donald, or by a combination of these methods, the surgeon can confidently approach any degree or variety of prolapse.

Experience has proved the value of these methods in patients in whom other pregnancies are anticipated as well as in elderly women. Modern technique has quite replaced such methods of treating prolapse as those described by Le Fort and Schauta operations, which cure by substituting a deformity and which, moreover, are associated with a definite mortality.

Palliative treatment occupies a definite place in the treatment of prolapse. A well-fitting pessary relieves many a patient from her symptoms, and for women who fear or refuse operation, or for whom the latter involves some risk, such treatment is indicated. Furthermore, it is impossible with the hospital accommodation of to-day to deal surgically with all the material presented. It is important to appreciate what a pessary will and will not do. It is useless, for example, to expect relief from a pessary if the lesion consists of hypertrophic elongation of the cervix. Similarly, a pessary is of little or no avail in the treatment of rectocele, advanced cystocele, or complete procidentia. Palliative treatment should be reserved for: (1) Slight or moderate degrees of cystocele; (2) retroversion of the uterus without descent, if it is the cause of symptoms; (3) retroversion of the uterus with descent of moderate degrees; (4) prolapse of the vaginal walls during pregnancy. The treatment of severe and advanced degrees of prolapse calling for much scaffolding in the form of very large pessaries is best conducted by surgical measures.

The mechanical devices in use to-day may be classified under the following headings: (1) Self-retaining "ring" pessaries of the solid rubber, "watch-spring," or rigid vulcanite or celluloid types; (2) self-retaining "oblong" pessaries of the "Hodge" or "Albert Smith" types; (3) self-retaining pessaries of the Simpson "shelf" variety; (4) rubber "ball" pessaries; (5) "cup and stem" pessaries with outside straps; (6) perineal pads. Rubber instruments have the great disadvantage of producing irritating discharges, and require constant attention. Probably the solid rubber ring is the best all-round instrument It is comfortable and easily introduced, but the patient should be examined every two or three months, and must douche at least thrice weekly with some unirritating solution such as normal saline. "Watch-spring" pessaries are dangerous, owing to possible deterioration of the rubber covering. Rigid instruments have the disadvantage of producing vaginal ulceration if too much tension is exerted by their size or atrophy of the vaginal walls in old age. The choice between a "ring" and "Hodge" depends upon the variety of prolapse and the direction in which it is desired to produce tension of the vaginal walls. For uncomplicated cystocele a "Hodge" is often efficacious, without having recourse to either a "cradle" or "ring." In cases of inversion of the vagina from above, it will be obvious that tension must be exerted in all diameters, and therefore a "ring" must be used. Simpson's "shelf" I regard as an abomination. Its only merit is that it is efficacious in keeping a prolapsed uterus in position. Its introduction and extraction can be so painful and distasteful to the patient that a woman tends to leave the instrument in situ until its presence causes pressure symptoms. Museums contain many "shelf" pessaries, which have ulcerated into either bladder or rectum, and which have required removal with bone forceps. Collapsible "ball" pessaries and "cup and stem" instruments are sometimes useful in affording relief to women with severe procidentia where surgical treatment is refused or contra-indicated. Their disadvantages are obvious, and in all cases patients should be instructed not only how to remove them at night, but also how to keep them clean. In those cases where the pelvic floor as a whole descends any pessary is, of course, useless. The only treatment that can be given is support by a perineal pad, apart from the relief afforded by certain douches and local baths at the various spas.

In conclusion, it must be remembered that once pessary treatment is instituted, a woman in nine cases out of ten is condemned to wear an instrument all her life, unless she submits to surgical treatment. Frequently it is necessary to employ larger and larger pessaries, and in the end the patient discovers that she has not avoided but only put off the evil day, and eventually is faced with either operation or the discomforts of an instrument with straps.

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Special Articles.

RADIO-ACTIVITY IN MEDICINE.

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THERE is so much difference of thought and practice about the indications, scope, and methods of application of radio-active substances in medicine that a review of the limited knowledge at our disposal may be of use in clearing the ground. The use of radio-active substances for medical purposes followed soon after the discovery and preparation of radio-active bodies. The home of the discovery in this case was France, where Henri Becquerel discovered that uranium spontaneously emits rays. It has been suggested by Regaud that the therapy in which radio-active substances are used should be known by the name Curie-therapie, thus honouring still further a name which will always be associated with a discovery of far-reaching importance, that of radium, a substance about two million times as active as uranium.

For the physicist there are two essential conditions that must be satisfied before a substance is admitted into the circle of radio-activity. One is that it must spontaneously emit rays, and the other that it must no less spontaneously change into some other substance. The rays from a few radio-active bodies have not been isolated; pending this they are called "rayless." The word spontaneous has especial weight in this connexion, for while there are many ways known by which substances may be *made* to emit rays, there is no chemical method by which the atoms of any element may be changed into another. This is the natural course of events in radio-active elements, of which there are now about 40 known. Of late years a physical method has been developed by Rutherford which does in certain instances appear to dislodge a fragment from the very interior (or nucleus) of the atom; this fragment is a hydrogen atom, which comes out at a great speed, and so we may look upon a stream of these atoms as a form of radiation strictly analogous to the alpha rays which come out at great speed from many radio-active bodies. It must be admitted that on a very restricted scale bodies can be made radio-active, but it is a very remote possibility that the natural product will ever have to give way to the manufactured article.

Local and General Action.

None of the effects which the rays from radium have upon man and the lower animals have received so little attention as the physiological ones. The subject is one which simply cries out for investigation, but the literature on the subject reveals how little is known. Yet the general effects of these radiations upon the body are profound and significant—profound enough to cause death from over-exposure, and significant enough to revolutionise in the future many methods of treatment which are now carried out without the benefit of exact knowledge. It may be regarded as almost certain that, although radium is applied quite locally, some general action always supervenes.

Two experimental facts may be mentioned which show that the general action upon the body may be completely reversed in character according to the degree of irradiation. If a piece of a tumour which has been exposed to a lethal dose is inoculated into an animal, this animal becomes immune to implantation of the same sort of tumour; when an immune condition has been set up in this way it is a very stable state and in most cases lasts the animal's life-time. If such animals are then given a heavy dose of radiation, followed by a tumour implantation, the result

is often that the tumour will grow temporarily. On the other hand, if we take some animals which are normally susceptible to these tumours and put them on a course of treatment which consists of very small doses of radiation spread over several weeks or months, and then inoculate tumour into them, the result is that the tumour will not grow so readily as in the normal animal.

Of the purely local action of the rays it will perhaps be enough to say here that detailed histological studies have shown that definite changes occur in the state and structure of cells after irradiation, and that in many cases the degeneration is enough to cause the disappearance of the cells. Other changes appear to be of a much more complicated character, and the early studies of Dominici showed the significant part which the normal and apparently unaffected tissues of the host play in what may be called the sequel to irradiation.

The Criterion of Medical Utility.

Of the two conditions necessary before a body is recognised as radio-active, the important one in connexion with medicine is the emission of rays, the spontaneous change of the atoms of one element into the atoms of another having no medical import. From the medical standpoint the importance of a radio-active body depends on the kind and quantity of the rays it gives out. There are three kinds of rays given out by radio-active substances and they were called alpha, beta, and gamma rays before their true nature was recognised. Some substances emit only one variety, others two and some, as a result of their atomic instability, emit all three. The order of medical utility of these rays is probably in the reverse order from that in which they are mentioned. Gamma rays are transverse vibrations of the ether and have the smallest wave-length known; the shortest of them is about a quarter of the wave-length of the shortest X rays which can be produced at the present day. It is not likely that electro-technicians will be attracted to the problem of producing such very short wave-lengths; their production is more economically left to Nature's workshop. We may mention that some of the gamma rays from radio-active substances have the same wave-length as very hard X rays, and their identity has been firmly established. It must not be concluded that gamma rays of the shortest wave-length have the same physiological actions as X rays, for experiments have shown that X rays of different wave-lengths produce different effects upon animal tissues even though the same amount of energy is expended.

Next in importance come the beta rays, electrons of a speed only a little less than that of light, called rays before their identity with the cathode stream of the Crookes tube was disclosed; and here again we may remark on the fact that the beta rays leave the atoms with a considerably greater speed than can be artificially imposed upon electrons, as in an X ray tube. Though travelling at high speed the beta rays have not much penetrating power; half an inch of tissue would practically quench them. They give rise to an intense local action when an unfiltered source of radium is placed in the body, but this can be avoided by the use of silver or platinum screens.

The alpha rays are atoms of helium; they are very high-speed gas particles which, however, have so little penetrating power that a sheet of notepaper can stop them; their medical use is very limited, though where they do act their effect may be very intense. When judging the medical utility of radio-active substances in a general way the two things to consider are—does it give out gamma and beta rays and does it give them in large quantities? Radium is without doubt the most extensively used radio-active substance in medicine and yet it gives out neither gamma nor beta rays. To explain this paradox we must here make a digression.

The Emanation.

One of the most surprising discoveries in radio-activity was that a "something" was given off by some of these substances which resembled a gas. When Rutherford discovered this was the case with thorium he had natural hesitation in calling it a gas, and in fact he called it an emanation. When Dorn followed up this discovery by showing that radium also liberated a gas, this was called radium emanation. Further researches showed that these emanations were true gases in the ordinary meaning of the word, but they were also radio-active, which distinguished them from the other gases known to the chemist. There is one other emanation known called actinium emanation, but radium emanation is the only one of medical utility. Ramsay suggested that this should be called niton (the shining one), but the original name has generally been maintained, and it does not appear to be too big a strain on general courtesy that the christening name suggested by a discoverer should be accepted by others.[1] The emanation is spontaneously produced from radium. The radium gets used up by this act of production, but only very slowly; an ounce would get reduced to half an ounce, a gramme to half a gramme, a grain to half a grain in about 2000 years. It is to be noticed that whatever quantity may be taken to start with, half of it always gets used up in the same time. This time is called the time-period and the same sort of process runs through all the radio-active bodies. They all have different time-periods and in all cases this term is used to indicate the time taken for one half the quantity present to change into something else. The emanation half vanishes in 3·85 days, it goes on half-vanishing every additional 3·85 days, so that in about a month there will be less than 1 per cent. of what there was to begin with. As it vanishes it emits alpha rays and changes into a substance known as the active deposit.

The Active Deposit.

The active deposit is so-called because it sticks to the surface of things; it is no longer gaseous but solid. It is really a very complicated mixture, the details of which cannot here be dealt with; the important thing about it for our present purpose is that it emits gamma and beta rays in large quantities. Here, then, is the explanation of the paradox, for though radium itself emits none of these rays, its products do. If radium is sealed up in a tube, it at once begins to produce the emanation; this in turn produces the active deposit, which gives the main radiation. Since radium is, practically speaking, a permanent radio-active body, the yield of rays goes on indefinitely and the more radium there is in the tube, the more rays we get from it.

It is, of course, quite a different matter if the emanation is pumped off from the radium and collected in a tube. To do this some radium chloride or bromide is dissolved in hydrochloric or hydrobromic acid and run into a flask which is then sealed on to a mercury pump. As the emanation is produced from the parent substance it is pumped off, purified of any contaminating gases and condensed by means of liquid air into a tube or other device. The volume of pure emanation which one could collect from so large a quantity as 1 gram of radium would not be so much as a cubic millimetre. Hence it is possible to get a very intense radio-active source by condensing the emanation into a minute glass tube; in this case the active deposit will in due course be produced and we shall get the appropriate amount of gamma and beta rays, but it will gradually decline in strength according to the half-value rule mentioned above. Therefore, when the emanation is used medically there is a little more trouble in specifying the actual strength of the source that is used. In this country we generally reckon the

[1] An International Committee on Chemical Elements, 1923, has recently suggested that radium emanation should be called radon.

average strength of the tube during the time it is used. The French school has adopted a quantity which depends on the number of "millicuries détruits," and although this method has not yet been generally accepted there is something to be said for its adoption. The main idea of the method is based upon the argument that the effective amount of radiation obtained from a tube is proportional to the amount of emanation that is vanishing into the active deposit, and, as the emanation unit is the curie or its fraction the millicurie, the number of these "millicuries détruits" is an indirect measure of the effective radiation employed.

Radio-active Substances other than Radium.

The only substance which emits gamma and beta rays in quantity comparable with that of radium and its products is mesothorium. The gamma rays emitted by this substance are actually a little, but not much, more penetrating than those from radium, and the preparations of mesothorium are sold on the basis of radium standards. A tube of 50 mg. means a tube which gives the same amount of gamma rays as a tube containing 50 mg. of radium, and so on. The price is about one-half that of radium, mainly owing to the fact that the preparations are not permanent; they diminish in strength much more quickly than radium does and so the owner is threatened with severe capital depreciation. The preparations get a little stronger after they have been kept for a time and then they half-vanish in about ten years.

Points in Dosage.

The medical and surgical conditions for which radio-active substances are used include certain forms of malignant disease, some gynæcological conditions, and many varieties of skin affections. There is a large mass of physical data available about the rays and their properties, but it is still difficult to formulate a scheme for the use of the weapon on a strictly quantitative basis. Until such a basis is established it will remain difficult for anyone to describe his methods of using radium in such a way that other people may benefit by his experience. This obstacle cannot be overlooked and there are no successful short cuts to its solution. A typical instance of the short cut is the introduction of the term milligramme hours; this figure is obtained by multiplying the number of milligramm s of radium (or of radium salt) by the number of hours for which it is used. Nothing could be more misleading than such a term, for it is of vital importance to know the actual weight used and the time during which it is applied, and these are frequently not stated by writers. No physician would expect to be taken seriously if he specified the dose of the drug which he had used by such a term as minim months. For surgical use radium is generally sealed in platinum or other metal tubes suitable in size for the amount of radium used, and the statement of dosage must begin with a description of the tube, its length, diameter, thickness of metal, and the quantity of radium it contains, with the further information whether any additional screen was employed. The next step is where the difficulties begin; if three or four of such tubes are inserted into a growth, how can information be set down which will be quantitatively useful? Perhaps the most (and the least) that can be done is to state approximately the size of the growth in question, specify the distances separating the tubes and how far beneath the skin they are placed, and for how long they are left in position. If this is supplemented by drawings to scale, a very valuable amount of information may be got, quite enough in fact for the description of a technique that others may perhaps wish to follow. Something has to be left to the individual even with all this information before him. He has to bear in mind and attempt to visualise the variations in the strength of the radiations from point to point in the tissues, for it is impossible to get uniformity by the means described.

Selective Action.

Were it not for the fact that the rays in passing through the tissues of the body affect some of them more than others there would not be much place for radium-therapy. This selective action lies at the root of the matter, and it has been abundantly proved that in their reaction to radium rays animal tissues form a long series ranging from those which are extremely vulnerable to those which are very insusceptible. If for practical purposes of illustration we fix upon the skin as a type of tissue which is vulnerable to the rays to a medium extent, then on the side of greater vulnerability we should have to put some of the blood cells, cells of the ovary and testicle, and a few varieties of malignant cells, while at the other end of the list, as instances of tissues more resistant to the rays, we should place most varieties of malignant cells, muscle, nerve-tissue, &c.

A great deal of practical interest centres round the degree of selective action that the rays exert upon malignant and normal tissues, for it is more than probable that the series of events following irradiation is determined somewhat by the interplay of forces between them. We may in fact say that the sequel to tumour irradiation depends not only on the dose which it has received, but on the nature and extent of the reaction of the normal tissues of the host. Following the exposure of several varieties of the lower animals to the gamma rays from a large quantity of radium, Lazarus-Barlow has made a detailed study of the degree of selective action exhibited by the normal tissues. His main results are embodied in the Medical Research Council's Special Report Series, No. 62 (1922).

Lethal Action.

The chief aim in using radium in the treatment of malignant disease is to kill the malignant cells with as little damage to the healthy cells of the body as possible. The dose that will just be sufficient to prevent any further growth of cancer cells is called the lethal dose. So it follows that, if the parts of a tumour which actually get the least amount of radiation receive a lethal dose, then, in many cases, other parts receive much more than the lethal dose; in some instances the difference in the amount of radiation may be so great that actual necrosis of the tissue occurs. This is not generally considered good therapy. If less than the lethal dose is given the growth of the cells may temporarily be arrested, but almost inevitably the time comes when they will again become actively dividing and growing cells.

It is a comparatively easy matter experimentally to slow up animal tumours by doses of radiation which are less than a lethal dose, so that they grow at a half, a third, a quarter, or an even smaller fraction of the normal rate of the tumour, although there may still be no recognisable histological change in the cells. If a very small dose is given the question arises as to whether the tumour cells would grow quicker than the normal rate. It has been observed under these conditions that the tumour does grow a little quicker than usual, but it is a very difficult thing to be sure of. The whole question of the stimulating action of radiation is of great importance.

Stimulating Action of Radiation.

Perhaps no aspect of radiation therapy has met with such controversy as that generally included under the term "stimulating action." It is pretty clear that much of this controversy might have been avoided if the single term "stimulation" had not been used to cover a whole lot of phenomena which had little in common with each other. But the term has been dragged in to express equally well what happens if a tumour happens to grow faster after radiation treatment and the earlier hatching out of a batch of irradiated larvæ than the batch of controls. The word has been used with too much latitude, and it seems that as the action of radiation upon cell life yields more and more to experimental treatment, we want more explicit terms to describe the general features of the processes

which are being studied. One does not, in fact, have to select such widely different examples as has been done in order to illustrate this point. The necessity is felt even if we restrict our attention to the irradiation of a tumour, for it seems that there are at least two possible ways in which the tumour, being apparently stimulated, might increase (instead of decrease) in size. If a tumour is septic the effect of a moderately big dose of radiation may be that the tumour grows faster than before; it is said to be stimulated. The general argument here could be that the normal tissues are already lowered in tone by the sepsis and, further, by the radiation, and although the tumour cells may have received a dose which under ordinary circumstances would slow them up, the normal tissue factor more than counter-balances this, and the tumour goes ahead. If this is to be considered stimulation, then it must clearly be distinguished from the possible increased rate of growth of individual cancer cells when they received 1 or 2 per cent. of the lethal dose. The importance of studying the normal tissue reaction of the host in radiological problems has not, indeed, received sufficient attention from physiologists.

Radio-activity and Spa Treatment.

It has been pointed out how little is yet known of the general effect even of irradiation carried out by applying tubes of radium or emanation to the surface of the body. What, if any, action is likely to be exerted by radio-active substances as they occur in natural waters remains highly speculative. A natural water rich in radium is still to be looked upon as an extremely weak concentration of radio-active material. It is not generally realised that there are few samples of water which do not show the presence of radium in minute quantities. When J. J. Thomson found radium in the tap-water at Cambridge many years ago this led to a very exhaustive series of measurements of the radium content of spring and river waters and the sea all over the world. It turns out to be, at one and the same time, one of the scarcest and yet one of the most far-flung elements. Some of the springs were found to contain a relatively large amount, not surprising if they are looked upon as collectors, often over large areas. Many spas published accounts of the radium content of their water, and there was a little delicate rivalry about some of the figures. Questions were raised about the possible part that this radium might all the time be playing in the treatment at these centres; suggestions, not perhaps amounting to claims, were made that such quantities of radium probably had a good deal to do with the efficacy of the waters. Others were not unmindful of the high content of other significant salts with which these waters were loaded, and the challenge was made that proof of the radium theory would be easy to establish if it could be shown that distilled water rendered radio-active to the same degree was just as efficacious as that of the waters of the spa itself. I am not aware that the challenge has ever been taken up and the true scientific foundation for spa therapy is still to seek.

MEDICINE AND THE LAW.

A JUDGE UPON EVIDENCE OF INSANITY.

TWO cases were referred to in THE LANCET of Dec. 1st, p. 1206, both tried at the Central Criminal Court, in one of which Judge Atherley Jones bound over an accused to come up for judgment if called upon in order that he might go into an institution, and in the other of which Sir Ernest Wild passed a "hard sharp sentence" in order to "teach" a young woman, who had certainly performed many criminal acts, presumably to live an honest life. In both of the above cases there was medical evidence from prisons where the accused had been confined that they were not certifiably insane but mentally defective. Since their cases were disposed of Mr. Justice Avory has had before him twice a man named Iggulden, and has sentenced him to death for the murder of a woman whom he undoubtedly killed. Iggulden cut the throat of Ethel Eliza Ireland in a taxi-cab, and at once drove to a police-station, told the police what he had done, and gave himself up. Before he was arraigned at the Central Criminal Court, counsel instructed on his behalf submitted that he was not fit to plead or to instruct counsel as to his defence. On this issue Dr. W. N. East, who had him under his charge at Brixton prison, gave a positive opinion that though the prisoner might be able to follow the proceedings, he was not fit to instruct counsel. Dr. East mentioned that Iggulden suffered from delusions, but that he would say nothing about them for fear of being brought in insane. Mr. Justice Avory, addressing the jury, after questioning Dr. East, directed them to bear in mind that "justice had to be administered according to law and not according to the view of medical men." Dr. East had expressed the opinion that the prisoner was able to follow the proceedings. If he could do that, his Lordship said, and if he understood what the witnesses said against him, it was for the jury to judge whether he was not able also to give instructions for his defence. His lordship said that he had observed that the prisoner took a lively and apparently intelligent interest in the proceedings then going on. If the jury were not satisfied that he was insane so as not to be fit to plead, the case would proceed. The jury found that the prisoner was fit to take his trial, and on the next day he pleaded "not guilty," and his trial took place, with the result that he was convicted of murder and sentenced to death. After this the jury recommended the prisoner to mercy, and were told that the recommendation would be duly forwarded to the authorities. For the defence evidence as to the prisoner's mental state had been given, witnesses, who proved that his grandmother on his mother's side was insane and an aunt and a cousin were idiots from birth, being preceded by Dr. East, who expressed the opinion that the prisoner was insane, and did not know that what he was doing was wrong when he killed his victim. Dr. T. B. Hyslop gave evidence to the same effect, and was emphatic in saying that Iggulden had no wish to escape death, and only desired to find a way out of life. This was with reference to a point which evidently weighed with Mr. Justice Avory, and to which he made reference in his summing up, advising the jury to consider that the prisoner knew that the medical men were examining whether he was sane or insane, and to judge whether in those circumstances, with a prospect of escaping death by being found insane, his statements could be relied upon. No doubt more will be heard of the case, and if the Court of Criminal Appeal uphold Mr. Justice Avory's summing up the Home Office authorities will have to consider the question of his sanity before the man can be executed. With regard to Mr. Justice Avory's statement above, that in cases of this kind justice has to be administered according to the law, none will find fault; when he adds that it is not to be done "according to the view of medical men" the question is suggested, "Then why call medical men as witnesses?" Is their evidence to be accepted only when the Judge agrees with it? And is the jury, even with the aid of the Judge, better able to ascertain the mental condition of a prisoner in the dock than medical men with training and experience to qualify them, who are able to examine him and converse with him? A prisoner, sane or insane, admittedly may try to practise deception, but the expert, it is submitted, is vastly better able to judge this than the layman.

ROYAL MEDICAL BENEVOLENT FUND.—A ball in aid of this fund will be held at the Kensington Town Hall on Feb. 5th, 1924, under the auspices of the British Medical Association (Kensington Division). Tickets, 1 guinea each, or six for 5 guineas, can be obtained from the Hon. Secretary, Dr. Howard Stratford, 20, Upper Phillimore-place, Kensington, London S.W.

PARIS.

(FROM OUR OWN CORRESPONDENT.)

A PROPOSED MEDICAL COUNCIL.

AFTER a long inquiry judgment is about to be passed concerning the scandal of the "medical coupons," on which I commented in my letter of June 16th. Further convictions have been lodged recently in various towns of France and particularly in Paris. It will be remembered that certain officials, doctors, and pharmacists were found to have tampered to their own considerable profit with the vouchers honoured by the State in connexion with the free medical and pharmaceutical treatment of pensioners. The scandal has evoked a feeling of disgust among the medical profession generally, which has been shared by the public, but the public is apt to forget that among the 22,000 doctors practising in France a small proportion only are black sheep whose shortcomings have been emphasised and exaggerated by copy-hunting journalists. Nevertheless it cannot be denied that, besides the scandal of the medical coupons, there have been too many shady practices indulged in for greed of gain; convictions have been lodged for traffic in narcotics and for attempts on the part of proprietors of questionable cliniques to circumvent the law. The time was ripe for reconstruction and the first move was taken by the doctors' syndicate of Toulouse, which, inspired by Dr. Aversenq, proposed to create an Ordre des Médecins which would take on a disciplinary function similar to that of the existing "Ordre des Avocats"—namely, to deal with all professional delinquencies. The principal articles of the suggested council are as follows:—

Art. 3.—Local medical councils would be recognised under the law of May 12th, 1920. Each council would be administered by a committee composed of 6 if it represented 60 registered doctors, 9 for districts where 61 to 100 doctors were registered, 12 where over 100 doctors were registered, 15 where over 200 doctors were registered, and 24 in Paris. The president would have a casting vote. The committee should be elected for three years by ballot, on a clear majority of the votes of the members present, convened in general assembly, a third of its number retiring each year. The committee should elect its president annually.

Art. 4.—The electorate should consist of such doctors as have been in practice for three years in the district. This period should be extended to ten years for the first three years during which the law is in force. Doctors who have practised in the same district for ten years should be eligible for election.

Art. 5.—The committee of a local council should prosecute and punish, on its own initiative or following any complaints lodged, all infringements or errors committed by the doctors inscribed on the register or by their authorised substitutes. According to the extent of the infringement of the rules of medical ethics, the committee of the council could exercise the following disciplinary measures: (*a*) warning; (*b*) censure, with or without black-listing, with or without the suspension of the right to vote or to be elected, for a period not exceeding ten years; (*c*) fine, which may or may not be combined with the preceding penalty; (*d*) permanent or temporary suspension from the performance of any legal, medical, or educational function under State administration, in the departments, the communes, public institutions or in the public services, benevolent or mutual help societies, insurance societies, and so forth; this interdiction would be confined to one district and could only be inflicted for a second or subsequent offence; (*e*) deprivation of the privilege of practising medicine for one year or more; (*f*) erasure from the register. Suspension and erasure should be limited to one district. This penalty could only be applied in the case of a second or subsequent offence after judgment had been passed, in accordance with Art. 25 of the law of Nov. 30th, 1892. The practice of medicine during a period of suspension or after erasure from the register once judgment had been passed would be punishable as illegal practice.

Art. 8.—Petition of appeal against charges of incompetence, exceeding of duty, or violation of the law could be laid before the national medical council.

Art. 9.—There should be a national medical council, sitting in Paris, composed of 19 members. Among them should be the President of the Academy of Medicine, as President and member ex-officio, nine councillors from the Court of Appeal or from the State Council, and nine doctors elected by ballot every three years by the district councils. The national council should be recast every year up to a third of its membership, the districts being called upon in rotation to supply delegates.

The View of the Profession.

This proposal would give to the profession and to the public alike much greater satisfaction than the projected law deposited in the Chambre des Députés in February, 1923, a law which was incompatible with the traditions of liberty and independence of the French medical profession. On the other hand, many doctors are of the opinion that the medical syndicates at present existing could play a much more effective part if given adequate disciplinary powers. However that may be, the medical profession is at present agreed: 1. To strengthen its defence against the intrusion of undesirable elements whose presence would bring into discredit the vast majority of doctors who place their professional honour above every other consideration. Unworthy doctors must be struck off the lists, just as an unworthy priest is unfrocked or a dishonourable officer is cashiered from the army. 2. To create a tribunal of honour embodying the following two principles: (*a*) extension of the powers of the existing syndicates (compulsory enrolment in the syndicates), increased disciplinary powers and their effective application; (*b*) institution of a medical council on the lines of the present proposals or on some other basis. It is recognised that the doctors must take the lead in order that the law may not take the initiative against the profession.

Some decision is, anyhow, to be taken which will mark a new era in the French medical profession and will mean a radical change in existing conditions.

Radiotherapy in Cancer of the Œsophagus.

Dr. Jean Guisez, who has received part of the Prix Montyon from the Académie des Sciences, recently brought before a congress of surgeons a series of cases of œsophageal cancer which have been under his care for over a year. Some of the cases are of three to ten years' standing, yet he states that an apparently complete cure has been obtained. The patients before treatment all showed symptoms of dysphagia, but since the application of radiotherapy Dr. Guisez asserts that deglutition of all types of food has returned to normal, and that examination with the œsophagoscope showed complete disappearance of the tumour. In a few cases the results were obviously merely palliative, but in certain favourable instances the action of the radium was apparently complete and permanent. In all the patients diagnosis was based on endoscopy controlled by a microscopical examination of a section of the tumour. Two factors are necessary for successful application of treatment: (1) the tumour must be carefully defined to ensure the effective placing of the radium tubes, and (2) the lumen must admit a bougie No. 20 or 22, which contains the radium. Dr. Guisez advocates the use of the long bougie. Results have much improved since treatment was continued for longer periods (24 hours with a total of 90 hours) but given in smaller doses divided among several tubes. The platinum tube cases must be very thick, 1 to 1½ mm. Improvement in the patient's condition took place immediately; swallowing, which was previously impossible, became easy, and in many cases these results have persisted for years.

Death of Dr. Paul Oudin and Dr. P. A. Chaslin.

Dr. Paul Oudin (1851–1923) was born at Épinal and was educated in the Medical School of Strasbourg and subsequently in Paris, where he acted as interne des hôpitaux. As a pupil of Claude Bernard, he devoted himself when a young man to the study of the action of electrical currents on the organism. His work turned successively on diagnosis by electrical methods, radiotherapy, and the study of radio-dermatoses. He was the first investigator in France to apply radiotherapy to the treatment of uterine hæmorrhage.—Dr. Chaslin (1857–1923), physician to the Salpêtrière, specialised from his student days in mental pathology. His work embraced chiefly semeiology and pathological psychology. He was the

author of numerous publications on psychiatry, including treatises on the part played by dreams in the evolution of delirium, the relations of delirium to hallucinations, dementia præcox, and the responsibility of criminals and of the insane. His most important work is incorporated in two text-books, Mental Confusion (1895), and the Elements of Semeiology in Mental Cliniques (1912). By the death of Dr. Chaslin the psychiatric world of France has sustained a great loss, for he was a man who combined deep intuitive knowledge with a keenly developed critical faculty.

BERLIN.

(FROM OUR OWN CORRESPONDENT.)

Changes in the Workmen's Insurance Act.

A RECENT government ordinance under the Emergency Power Act alters some of the provisions of the workmen's insurance law. The following are the principal provisions affecting the medical profession. A committee is to be formed for the whole Reich, consisting of five medical men, five representatives of the sick clubs, and three non-partisan members, which will be authorised to lay down general rules for the admission of medical men to club practice, for contracts between medical men and clubs, &c. The law provides for local arbitration courts, and a supreme arbitration court for disputes between the clubs and medical men. It has hitherto been a source of dissatisfaction that club patients often asked the club doctor to prescribe medicines where such were not strictly necessary, and that the medical man, to preserve or to extend his club practice, was only too often inclined to comply with the wishes of the patient, to the detriment of the club finances. Any medical man found guilty of doing so may be warned by the club, and when the warning has proved useless he may be struck from the list, even when the contract is still running. The free choice system becomes curtailed by a provision that if the number of panel doctors is greater than one for each 1000 insured, the club board is empowered to decline the admittance of more medical men to the panel. This provision is very hard for those young medical men who are waiting for admittance and are now, perhaps for a lengthy period, excluded from club practice which under present conditions means complete exclusion from medical practice. The actually diminishing numbers of medical students will be still further curtailed by this provision. When no agreement can be arranged between a club and the medical profession, the club is authorised to pay benefit money to its members at a higher rate, the members providing their own medical attendant. According to the old law, when a club had made a contract with a dispensing chemist for the supply of medicine, all the dispensing chemists of the locality had the right of making such a contract and of supplying medicine under its conditions. This provision has been repealed, so that one or more chemists may give credit to a club on the condition that the other dispensing chemists are excluded. A club may henceforth pay an additional sum to its members to buy medicine, when no agreement has taken place between the club and the local pharmacies. But in every case the individual club member is obliged to pay to the chemist 10 per cent. of the costs before the medicine is delivered to him, 90 per cent. being paid by the club. In some clubs —e.g., in the club of the Krupp works, where this procedure has already been voluntarily accepted—the result was that the club has saved about 50 per cent. of the expenses for medicine, the patients, of course, consuming much less medicine and drugs if they have to pay in cash a considerable sum. The provisions of the ordinance have caused great indignation amongst the medical profession, and a general strike is already suggested in medical circles.

Jubilee of the Deutsche Aerztevereins-Bund.

The Aerztevereins-Bund—the union of German Medical Associations—celebrated its fiftieth anniversary this year in Bremen. The union was founded in 1873 in Wiesbaden, where all the local medical associations of practitioners united under the presidency of the late Dr. Graf, a medical member of the German Parliament, who was afterwards elected chairman yearly for 20 years. The aims of the union were of an economic rather than of a scientific nature, medical legislation, hygienic questions, medical teaching, and medical examinations being the principal topics of discussion. Later on, when the sick club question became more and more urgent, the organisation of the union proved too loosely knit to engage in a successful battle. Therefore as early as 1900 a new organisation was founded by the late Dr. Hartmann, of Leipzig, its popular name being the Leipziger Verband. After the death of Dr. Hartmann the new organisation, in honour of its founder, was officially called the Hartmann-Bund. This association, which has local branches in every town and district of Germany, has adopted the methods of the trade-unions by settling with the various clubs tariffs for attendance on club members, collecting a strike fund, and organising strikes if necessary. Originally both organisations were distinctly hostile to the other, but very soon an agreement was established, and now both associations often work together, the strong organisation of the Hartmann-Bund being of great help to the older institution. The unfavourable financial situation of Germany made it impossible to convoke a general jubilee meeting because the expenses for railway fares, hotel accommodation, and so on are much too high for the average medical man and even for the delegates of the local branches. Therefore only the central committee met in Bremen, and, after disposing of current business, celebrated the fiftieth anniversary of the union.

Letters Patent for Dr. Friedmann.

In 1913 Dr. Friedmann, of Berlin, demonstrated before the Medical Society a method to cure tuberculosis by injections of turtle vaccine. His alleged favourable results were much criticised. A commission instituted by the Government, under the chairmanship of Prof. Lubarsch, came to no definitive result because the opinions of the members differed too much as to the efficacy of the treatment. Dr. Friedmann had applied for a grant of letters patent for his remedy, although according to the German law a remedy itself can never be patented, a patent being granted only when the method of producing the remedy is new. In this way Ehrlich's salvarsan and Behring's diphtheria antitoxin had been patented. The granting of a patent to Dr. Friedmann had been challenged by some chemical works because, according to some, his method was not new. The Supreme Court of Leipzig has now given a verdict that the patent has been rightly given, and that two chemical works which had illegally produced the vaccine were liable to pay an indemnity. The court stated that Dr. Friedmann's process was quite a new one and that, in the opinion of many authorities, it had proved useful in the treatment of tuberculosis.

Help to the Ruhr Children.

The occupation of the Ruhr has had a bad effect on the children. They could not go regularly to school, the school premises being used as barracks for the occupying forces, while private dwellings often became insanitary through overcrowding. As child mortality and illness increased, many children were sent away to unoccupied Germany. This took place first in a rather unsystematic way, but later a committee was formed, consisting of members of the trade-unions, of benevolent societies, and of the authorities, which took the general organisation in hand. Local committees selected the children for evacuation. A distinction was, of course, made between healthy and weakly children. The healthy children were sent to

country districts, where they were likely to receive an abundant supply of food, and where they might engage in some light occupation and attend the local school. The families to which they were sent were chosen by trustworthy persons, clergymen, and others. Not only in Germany, but also in some other foreign countries, Denmark, Norway, Sweden, and Switzerland, the children from the Ruhr were heartily received. Children in the second category were the weakly and the sick; they were selected by the school medical officers, and, with the help of the German Association for the Care of Children, were sent to sanatoriums, health resorts, and spas. Some 40,000 children were in this way taken out of the occupied district for several months, and then a new group was sent in their stead. The medical profession outside the occupied district took a particular interest in helping their professional brethren. The medical press published lists of medical men willing to receive in their homes children of their colleagues in the Ruhr district, in part absolutely free of charge, and in part at exceptionally low rates to cover at least a portion of the expenses which they could not bear alone under the present distressing condition of the profession.

Venereal Clinics.

According to a statistical record published by the German Health Office, there are at present 193 Advisory offices (Beratungsstellen) for venereal diseases in Germany, at which 106,753 patients received advice in the past year. This number has slightly diminished as compared to that of the preceding year, when the offices were frequented by 118,982 patients, of whom 77,307 were found to be infected. Of this number 44,000 were men and 33,000 women. 26 per cent. of the men and 15 per cent. of the women were married. Insurance under the Workmen's Insurance Act covered 62,000 cases.

VIENNA.

(FROM OUR OWN CORRESPONDENT.)

Dangers of Domestic Electricity.

IN a paper read by Prof. Stephen Jellinek before the Teachers' Society the dangers involved by the extensive use of electricity in every-day life were described with a view to instructing the public on the best means of avoiding these risks. In accordance with an order by the Board of Education, instruction in domestic electricity is now compulsory in elementary schools. Prof. Jellinek pointed out that it was not the high-voltage current only which could be detrimental to the individual as was generally supposed. The ordinary household current of 110–220 volts used throughout the world for heating, lighting, and medical purposes might, under unfavourable conditions, produce a shock capable of causing serious or even fatal effects. If the person is in good conducting circuit with the earth such an occurrence is very likely to happen. Carpets or straw mats are considered a good protection, but if these happen to be wet, then the current can pass through the body. In sculleries, bathrooms, pantries, or cellars, where there are gas pipes, water pipes, or metal stoves, a person handling an electric apparatus or an electric light, always runs a certain risk. Even the touching of a cable of a lift is known to have caused a fatal injury. As the current is generally "earthed" via the legs and feet, the footwear must be carefully attended to by persons exposed to these risks. Wet shoes, or nails on the soles of an ordinary boot, or bare feet, are very dangerous in that respect. But, of course, individual tolerance plays an important part, as does also the psychical condition. An unexpected shock is much more dangerous than one which the person is expecting. Although the effects pass off very rapidly in many cases, it is important to disengage the connexion as quickly as possible, either by switching off the current or by pulling the patient away. In the latter case, the rescuer must be careful to stand on dry objects and to wrap his hand in a dry piece of cloth. If the affected person has stopped breathing artificial respiration must be instituted at once; life has been saved thus in many instances of electrocution. The burns resulting from the passage of electricity through the body are generaliy more or less painless and heal slowly, whilst nervous disturbances may remain.

Voluntary Workers of Welfare Centres.

A few days ago the second meeting of the abovementioned social workers took place in Vienna, where some very interesting and useful papers were read. Thus Prof. Zappert emphasised the necessity of reinstating measles, whooping-cough, and epidemic parotitis as notifiable diseases, as thereby an enormous amount of injury to public health would be prevented. Provision for the care of infants and children suffering from epileptic seizures, from feeble-mindedness, and paralysis is quite insignificant in this country, and even more so for individuals suffering from enuresis. A widespread organisation should be instituted for these unhappy children. He also laid stress on the necessity of controlling the excessive indulgence in sports, nowadays so favourite a pastime of our youth. It may be added here that there exists a special "heart dispensary" in Vienna, under Prof. R. Kaufmann, where all members of sporting clubs can be regularly examined. Full records of many of these persons are already stored there. Dr. Moll pointed out that in spite of the sensibly diminishing general mortality-rate of infants in Vienna, the proportion of illegitimate babies is rapidly increasing. He urges the organisation of welfare-centres in the densely populated districts, and the establishment of such centres all over the country, as well as in the cities. Prof. Hamburger discussed the problem of combating tuberculosis in children. He said that infection took place only from man to man; the other possibilities hardly required consideration. In 75 per cent. of cases infection occurs through the family, by parents, other children, or nurses; in the other 25 per cent., through visitors or other household members. The age of the infected child is of utmost importance, the first year of life being the danger period. Hereditary predisposition and insanitary surroundings have much to do with the development of infection. Prof. Hamburger suggests the institution of "preventories," where children of diseased parents could be brought up or protected against infection. Dr. Smola urged the imposition of severe regulations to prohibit the sale of intoxicating liquors to juveniles, and Mr. Braunlich, the head of the Municipal Welfare Centre for Children, explained the measures adopted by the city of Vienna to ensure a stay of four to eight weeks in the country for all children pronounced below par by the municipal school doctors.

Alarming Increase of Criminal Abortion.

In a paper read before the Vienna Medical Society, dealing with the increasing frequency of intentional abortion within the last few years, Prof. Latzko stated that the records of one maternity hospital give a good insight into the actual conditions. Whilst in 1898 the ratio of abortions to births stood at 18·9 per cent., in 1908 it rose to 32 per cent., in 1913 to 57 per cent., and in 1921 it dropped to 44·8 per cent. of all births taking place in that hospital. If, however, we consider separately the married women and the single women, we find that amongst the older married women (over 25 years of age) the average number of abortions is fairly constant (10 per cent.). But amongst the younger women—under 25— the married women showed 30 per cent., the single women 90 per cent. of abortion in the year 1898. Ten years later the figure for the unmarried was 102 per cent., 1913 it was 201 per cent., and in 1921 it was 331 per cent.—i.e., more than three times as many abortions as births. In other words, the overwhelming majority of all abortions in single women must be regarded as intentional or, synonymously, criminal, whilst amongst the married women the ratio of 30 per cent.

has remained fairly constant for years. The social and economic conditions of the population (and not alone in Austria) seem to call for birth control, for it is much better to prevent pregnancy by contraceptive means than to leave the woman to take the risk of what is generally a non-medical attempt at abortion. In this country there is a strong party endeavouring to induce legislation to make artificial abortion before the third month a non-criminal procedure, and to spread the knowledge of contraceptive measures amongst the lower (poorer) classes of the population.

Convention as to Lunatic Persons.

Austria and Sweden have agreed to assist each other in helping to house or treat persons afflicted with mental disease, from one or other nation, by providing that such patients will be received in mental hospitals on the same footing as any native patient. In case such a person has to be sent back to his native country, all medical papers and histories, together with the necessary notes, will be handed over to the proper authorities. All costs and expenses incurred by one country for the subjects of the other are to be refunded in full.

Public Health Services.

SCHOOL MEDICAL SERVICES.

Gloucestershire.

THE number of children on the elementary school registers in this county is 41,242; of these 11,744 were examined under the code groups, 10,752 showing defects requiring either treatment or further observation. Among the entrants 4·5 per cent. were found with seriously defective vision, nearly 3 per cent. with external eye disease, 1·5 per cent. with ear discharge, and 20 per cent. with defective conditions of the nose and throat. An effort is being made to deal with the children of pre-school age—a problem which must necessarily find a different solution in urban and rural districts. The nursing staff consists of eight whole-time county health superintendents, whose work includes health and tuberculosis visiting, and 111 district nurses. An important improvement has taken place in the cleanliness of the children, only 40 children being found with pediculi capitis for every 100 found 12 years ago. In addition there is a marked diminution in the degree of infection. Dr. J. Middleton Martin remarks that these results have been obtained only at the expense of a vast amount of work, 53,177 examinations of 43,580 children being made during 1583 visits to 516 departments. It is curious to find that the worst districts in respect of pediculosis are the purely agricultural areas in the north-east of the county; the mining area of the Forest of Dean is an area of low incidence. The new scheme at present provides treatment for school-children, those attending maternity and child welfare, and tuberculous patients. For carrying out treatment three general hospitals, five cottage hospitals, two tuberculosis dispensaries, and one specially constructed wooden building are utilised. The work is done by local practitioners and district nurses, the specialist services of the visiting staffs of the hospitals and of the county tuberculosis officer being available. Of the 11,377 children treated during the year, 7628 came under the local authorities' scheme. The arrangements whereby dental treatment is given on the same day as inspection is working smoothly, and the number of children treated has been doubled under these conditions.

Bootle.

The average attendance here is high, 11,592 out of a school roll of 12,801. Of these, 4023 were inspected in the code groups, and 2386 children were specially examined. At the routine examinations 21·3 per cent. were found without any physical defect, compared with 22·5 per cent. in 1921. Malnutrition accounted for 10·6 per cent. against 7 per cent. the previous year, defective vision for 17·2 per cent., enlarged tonsils for 16·3 per cent., adenoids for 1·5 per cent., and lung disease for 4·8 per cent. Of the entrants examined 54·2 per cent. were referred for treatment. A routine test of hearing by means of the forced whisper at a distance of 20 feet was carried out in all cases except where the noisy condition of the school premises made it impossible. In 2·6 per cent. of the boys and 2 per cent. of the girls the hearing was noted as defective. It would seem doubtful if the results obtained from the application of this rough test to all children are worth the time and energy expended on it. Forty children visited the aural and 177 the throat clinic. Altogether 1556 children made 12,783 attendances at the minor ailment clinic, and 160 children made 2312 attendances at the remedial exercises clinic, where a consulting orthopædic surgeon visits three times a year attended by an orthopædic instrument maker. Last year he examined altogether 72 children, recommending 25 for admission to hospital with a view to operative treatment, 13 for no further treatment, and the remainder for admission to or continuance at the clinic. The 160 patients attending this clinic included 58 mouth-breathers, 25 cases of round shoulders, 29 of infantile paralysis, 3 of rickets, 10 of scoliosis, and 10 recent fractures. Dr. F. T. H. Wood reports that in addition to the three special classes for dull and backward children a fourth has been established for older children, providing altogether for 90 cases. Eleven children from these classes were drafted back to the ordinary school, and 16 were pronounced to be mentally defective.

MENTAL HOSPITALS SERVICE.

BY an Act of 1922 the administration of the *Three Asylums in Staffordshire* has been vested in a single authority, which has issued the annual reports of these three institutions in a single volume containing many points of interest. New visiting committees have been appointed, and the fact that two of these are composed exclusively of male members is commented on without approval by the visiting commissioners. The fact that one of these commissioners is herself a woman explains certain recommendations in their report as to the women's clothing, which argue investigations beyond the scope of masculine knowledge and interest. Apart from these criticisms, and certain references to roller-towels and scanty tooth-brushes, the commissioners have no fault to find. As regards diet, that at *Burntwood* is particularly commended; dinner in the main dining hall was "preceded by singing grace to an organ accompaniment, and music was continued during the meal." On the other hand, one searches in vain for any reference to the famous orchestra at *Cheddleton*; it is very much to be hoped that this remarkable feature of social life is being maintained in all the vigour which it displayed at the annual meeting of the Medico-Psychological Association held there in 1920.

It is left to the committees of visitors to criticise the state of the fabrics, which is evidently bad in many respects. Repairs have been neglected until not merely repainting but actual replacement has become necessary. In the case of Cheddleton some of the items in this count are startling. "The Nurses' Home, although opened in 1914, has never been painted, nor have the public rooms been furnished." "The need for new farm buildings does not grow less. The present accommodation is insufficient, necessitating an expenditure of £880 per annum on condensed milk, the shippons are dark and insanitary, tuberculosis is rife, and the subsoil is permeated with the filth of generations. The buildings remain a standing disgrace to the local authority." It is quite evident that the Staffordshire County Council must reconcile itself to immediate heavy expenditure in order to restore its property to a condition conforming to pre-war standards. This is a necessity which is being faced in some degree in institutions

throughout the country, and no financial advantage appears likely to be gained by any further delay.

Each of these institutions possesses a dentist and a pathological laboratory. Burntwood is also grateful for the relief afforded by the services of a dispenser. A very notable piece of bacteriological work has been carried out at *Stafford*—namely, a determination of the effect of different methods of floor treatment on the bacterial content of the air in a ward. "For every 100 organisms deposited in ten minutes on a certain small area when a ward floor was undisturbed for three hours, 1211 were deposited 15 minutes after sweeping, 1439 after sweeping with damp sawdust and tea-leaves, 228 after polishing, and only 86 after the use of a vacuum dust extractor." The advantage of the latter method is obvious, particularly when the high rate of infection with tuberculosis in asylums is remembered. The rate of mortality from this cause at Stafford has fallen, but, as Dr. B. H. Shaw observes, it is still twenty times that of the general population. He deplores the absence of facilities for isolating tuberculous cases, and, further, the absence of separate accommodation for recent admissions. In patients suffering from severe insomnia the absence of noise is of the first importance, and "under existing conditions the exclusion of noise is impossible."

Considerable trouble has been experienced with the female nursing staff here, as elsewhere. The following observations on this subject, however, read somewhat strangely. "The Ministry of Labour, without actually refusing permits for Danish nurses to enter the country, has raised certain difficulties, in spite of representations being made that the educated class so required cannot under any circumstances enter into competition with English female manual labour." "Good wages, ample liberty, and considerate treatment have so far failed to induce them to forego the temptation of matrimony under circumstances which do not to the onlooker present any compensating advantages." Each of these statements appears to call for some further explanation. An admirable feature at Burntwood is a "Club Ward," confined however, to the male side, where selected patients are allowed special privileges.

In the annual report of the *Derby Mental Hospital* no changes of note are recorded. The superintendent is assisted by only one (temporary) colleague; it is true that much larger institutions than this (409 patients are resident at Derby) are run by a staff of three medical officers, but between three and two there is a difference much greater in asylum practice than in mathematics, and in the more prosperous times, which perhaps lie ahead, these two gentlemen will, no doubt, be grateful for the assistance of a third colleague.

MEDICAL CANDIDATES FOR PARLIAMENT:

SUCCESSFUL AND UNSUCCESSFUL.

THE complete list of medical men entitled to sit in the new House of Commons is as follows:—

Members.	*Constituency.*	*Party.*
Sir George Berry	Scottish Universities ..	C.
Dr. W. A. Chapple	Dumfries	L.
Dr. F. E. Fremantle ..	Hertford, St. Albans ..	C.
Dr. L. Haden Guest ..	Southwark, North	Lab.
Mr. Somerville Hastings ..	Reading	Lab.
Sir Sydney Russell-Wells ..	London University ..	C.
Prof. T. Sinclair	Queen's University, Belfast	C.
Dr. E. G. Spero	Stoke Newington	L.
Dr. J. H. Williams	Carmarthen, Llanelly ..	Lab.
Lieut.-Col. T. S. Beauchamp Williams.	Lambeth, Kennington ..	Lab.

C., Conservative; L., Liberal; Lab., Labour.

A list of medical candidates is here given, showing the individual position at the poll, and the number of votes registered. An asterisk indicates membership of the last House of Commons, while a dagger sign indicates that the candidate contested this or some other seat at the last general election.

List of Medical Candidates for Parliament.

Constituency.	Name.	Position at poll.	Votes registered.
Universities:			
London.	Sir S. Russell-Wells.*	1	(1) C., 4,037
			(2) L., 2,593
			(3) Lab., 1,420
Scottish.	Sir George Berry.*	U	—
Queen's, Belfast.	Prof. T. Sinclair.	U	—
London Boroughs:			
Bermondsey, West.	Dr. Alfred Salter.*	2	(1) L., 9,186
			(2) Lab., 8,298
Camberwell, North-west.	Dr. H. B. Morgan.†	2	(1) L., 6,843
			(2) Lab., 6,763
			(3) C., 6,045
Islington, East.	Dr. Ethel Bentham.†	3	(1) L., 10,670
			(2) C., 9,038
			(3) Lab., 6,941
Lambeth, Kennington.	Lieut.-Col. T. S. Beauchamp Williams†	1	(1) Lab., 8,292
			(2) C., 7,782
			(3) L., 5,075
Southwark, North.	Dr. L. Haden Guest.†	1	(1) Lab., 7,665
			(2) L., 7,303
Stoke Newington.	Dr. G. E. Spero.†	1	(1) L., 8,365
			(2) C., 7,264
English Boroughs:			
Birmingham, Ladywood.	Dr. R. Dunstan.†	2	(1) C., 12,884
			(2) Lab., 11,330
Brighton (2).	Sir Henry Lunn.	1	(1) C., 30,137
			(2) C., 29,759
			(3) L., 17,462
			(4) L., 16,567
			(5) Lab., 9,545
			(6) Lab., 9,040
Manchester, Withington.	Dr. Thos. Watts.*	2	(1) L., 13,944
			(2) C., 10,026
Newcastle-on-Tyne, North.	Dr. R. W. Simpson.†	2	(1) C., 12,715
			(2) L., 6,321
			(3) Lab., 5,374
Portsmouth, North.	Dr. O. Gleeson.	2	(1) C., 13,229
			(2) Lab., 9,523
			(3) L., 3,584
Reading.	Mr. Somerville Hastings.†	1	(1) Lab., 16,657
			(2) C., 15,115
			(3) L., 5,406
Tottenham, South.	Dr. A. G. Newell.	3	(1) Lab., 10,312
			(2) C., 7,687
			(3) L., 3,974
Walsall.	Lieut.-Col. A. C. Osburn.	3	(1) L., 16,304
			(2) C., 14,141
			(3) Lab., 7,007
English Counties:			
Essex, Saffron Walden.	Dr. R. McNair Wilson.†	3	(1) C., 9,652
			(2) Lab., 6,398
			(3) L., 5,752
Hertford, St. Albans.	Dr. F. E. Fremantle.*	1	(1) C., 11,968
			(2) Lab., 6,640
			(3) L., 6,469
Lancaster, Newton.	Dr. H. B. Bates.†	2	(1) Lab., 12,492
			(2) C., 8,375
Lincoln, Gainsboro'.	Dr. J. E. Molson.*	2	(1) L., 9,694
			(2) C., 7,841
			(3) Lab., 3,039
Yorks, W.R., Normanton.	Dr. G. B. Hillman.	2	(1) Lab., 15,455
			(2) C., 4,365
Wales:			
Carmarthen, Llanelly.	Dr. J. H. Williams.*	1	(1) Lab., 21,063
			(2) L., 11,765
			(3) C., 5,442
Scottish Counties:			
Dumfries.	Dr. W. A. Chapple.*	1	(1) L., 13,107
			(2) C., 11,380
Lanark, Lanark.	Capt. W. E. Elliot.*	2	(1) Lab., 11,384
			(2) C., 11,154

U, unopposed.

There are thus ten medical Members to take the place of the twelve medical Members in the last session of Parliament. While this representation of medicine is strong and shared by the three political parties, the absence especially of Captain Elliot and Dr. Salter will be a real loss to the House of Commons, and one which we hope will soon be made good.

A SPECIAL course in Infants' Diseases for medical officers of welfare centres and others will be given at the Infants' Hospital, Vincent-square, Westminster, London, S.W., from Jan. 7th to 19th, 1924, under the auspices of the Fellowship of Medicine. Those taking part in the course will include Drs. W. E. Robinson, Norah Schuster, Eric Pritchard, Bertram Shires, Donald Paterson, Helen Mackay, Amy Hodgson, Vincent Denne, H. MacCormac, and Mr. Tyrrell Gray. Further particulars may be obtained from the Secretary to the Fellowship at 1, Wimpole-street, London, W. 1.

Correspondence.

"Audi alteram partem."

THE SHORTAGE OF NURSES.

To the Editor of THE LANCET.

SIR,—I am writing neither as an official of the College of Nursing, nor as a member of the General Nursing Council for England and Wales, but I was so interested in your article on Nursing Education in America in your issue of Dec. 1st that I should be grateful if you would permit me to offer one or two comments as one specially interested in the system prevailing in this country. I have lived in America and amongst American nurses and seen a fair amount of their hospital training schools, and although I am very willing to concede that we may learn something from America, we are, I think, at this present stage, viewing nursing from a somewhat different standpoint.

With reference to the establishment of a subsidiary service in America, I think I am correct in saying that many leaders of nursing there are viewing the results with anxiety: (1) The separation of the hospital administration from the training school administration would be an obvious improvement. At present the training school administrator is often overburdened, and the educational and personal needs of the nurses in many cases suffer accordingly. (2) I contend that a great deal of routine domestic work might be eliminated, but nursing is not only a dramatic performance of highly skilled treatments, it is the repetition of simple domestic duties performed perfectly and with understanding. This perfection cannot be attained without almost unlimited repetition, and any woman having only "a very brief training in bedside routine" cannot learn in that time to realise its significance. The medical profession may argue that the V.A.D.'s did magnificent work with their short and limited experience. There was the unique impetus of war service behind all their work, and a great number were picked women—the smallest fraction of them continued to nurse after the war, and it is nothing but the discipline of a continued training can make it possible for women to deal with the dullness of mild general sickness. (3) If the medical profession would calculate how much acute illness had been obviated by the skilful care of mild sickness by a well-trained nurse, they would look upon her as a factor in "prevention" as well as "cure." (4) To establish a subsidiary service is to risk in the future the poorer members of the community being nursed by the "aide" or "attendant," and the richer members engaging the skilled nurse.

I think the type of woman a subsidiary service with its limitations is likely to attract will not be the type of woman to answer the requirements of the medical profession, no matter how limited they may be. Unless one is actuated by some "professional" motive, by which I mean a motive of service of a high standard, nursing is often not even pleasurable. I might go as far as saying it is arduous and disagreeable. It is neither when based on knowledge and service. The State is now only requiring that nurses shall be safe to nurse the sick. The standard set by the State can never go far beyond that, because the sick *have* to be nursed, extra qualifications must be obtained after general training.

I should like to recommend that: (*a*) Before establishing a subsidiary service, let us obtain from *reliable sources* the result of the experiment in America. (*b*) Call a conference between leaders of the medical and nursing professions to ascertain the real need. (*c*) Appeal to the Ministry of Health to make a survey of the nursing services of the country, the result of which would be invaluable in arriving at the real nursing needs of the community. (*d*) Reorganise our present system in hospitals with a view to making the training more attractive. At present it is often unattractive to educated women, the initiative and mind of the woman not being allowed sufficient latitude. (*e*) Establish adequate pay and a superannuation scheme for all nurses, which will ensure educated women some provision for their later years.

I am, Sir, yours faithfully,

GERTRUDE COWLIN.

Grove End-road, N.W., Dec. 8th, 1923.

*** We are in substantial agreement with the proposals made by Miss Cowlin in the last paragraph of her letter, but since an organised subsidiary service on the lines suggested in the Rockefeller report has not yet been established in America a period must necessarily elapse before its results are available for consideration.—ED. L.

THE IMPORTANCE OF NASAL SINUS INFECTIONS.

To the Editor of THE LANCET.

SIR,—The case of exclusively sphenoidal sinusitis recorded by Dr. W. C. Rivers (cited in his letter in your issue of Nov. 17th) is of great interest and value as showing that a focal pyogenic infection of one of the smaller sinuses may cause just as marked pulmonary and general symptoms simulating pulmonary tuberculosis as may a maxillary or mixed sinus infection. Furthermore, as Dr. Rivers has shown, there are similar cases from sinusitis limited to the frontal or ethmoidal cells.

Dr. A. L. Yates's article and his subsequent letter in your issue of Dec. 1st suggest that it is the pus from the nose running back into the pharynx, &c., which is recovered and coughed up, and which accounts for the wasting and sometimes the febrile reaction. Yet surely it is not the spreading of pus but the spread of infection from the nasal discharge to the larynx, trachea, and bronchi that causes the bronchorrhœa and sputum. Dr. Yates has done good service in directing attention to purulent nasal sinusitis as a cause of simulated phthisis. But as he points out "by anterior rhinoscopy the nose generally appears normal and the airway as a rule is good on both sides," and thus he too finds the sinus cases with relatively scanty intranasal discharge that can only be seen by posterior rhinoscopy are those which cause spreading infection and toxæmia rather than the more typical sinusitis with nasal obstruction and profuse purulent discharge anteriorly and posteriorly.

Provided a sinus infection by pyogenic organisms has been definitely established and persistent, the more profuse the polymorphonuclear lymphocytes and the more active the phagocytosis the less the liability to spreading infection, and conversely with relative paucity of pus cells the greater the liability to the infection spreading. Hence, given such a focal infection, it is the virulence of the infecting organisms rather than the amount of pus present that is the important factor when we come to consider spread of infection. Pus is always present, sometimes obviously, often so scantily that to the naked eye the discharge seems merely mucus by the time it is recovered.

Thus I recommend the routine bacteriological examination of these discharges to confirm or refute the diagnosis. Until the lessons such examinations enforced my attitude was precisely that now adopted by Dr. Yates. If one finds to one's surprise on exploring a sphenoidal sinus in a case of canalicular optic neuritis no obvious pus but a pure culture of pyogenic cocci, and after the washing out and disinfection the visual colour fields, and vision obviously improve and sometimes become normal; if articular fibrositis similarly shows striking improvement under similar circumstances, and these happy experiences are repeated again and again, one realises that it is not only cases where pus is obvious to the naked eye that will benefit by appropriate treatment that Dr. Yates has so well emphasised. But only after years went did I learn to realise that it is the infection, not the pus, that counts and that sometimes the less the pus the more mischievous the infection. I am not referring

to slight infections of the sinuses only detectable by microscopical methods and not causing serious symptoms, for many such accidental revelations of organisms being present are really immaterial and they do not warrant operative measures, if only that simple working out often suffices to remove all trace of these slight, transient, and trivial infections.

Yet we have learnt that quiescent, apical, dental sepsis only detectable by radiography may be of greater clinical import than an obviously carious tooth or even an acute periodontal abscess that declares its presence by acute local manifestations.

I am, Sir, yours faithfully,

PATRICK WATSON-WILLIAMS.

Clifton, Bristol, Dec. 10th, 1923.

To the Editor of THE LANCET.

SIR,—In his letter commenting upon my article on Unsuspected Nasal Sinus Disease Dr. P. Watson-Williams raises points important for the rhinologist who has to investigate the extent of the sinusitis. The object of my article was to direct the attention of those engaged in general medicine and surgery to various conditions which infections of the nasal sinuses can produce and to emphasise the fact that it is by routine examination alone that we can avoid frequently missing the primary cause. For this purpose I thought it best to quote cases in which the visible pus obtained left no doubt as to the diagnosis. In the diagnosis of sphenoidal sinusitis I have found Dr. Watson-Williams's syringe of great value. But where no macroscopic pus is obtained in the fluid sucked back from the sinus I think great caution should be used in making a diagnosis from the microscopical evidence obtained. No matter what precautions one takes in applying antiseptics to the septic vestibule of the nose it is impossible to avoid contamination of the cannula passed down into the sphenoidal sinus. A rhinitis is often present in these cases, and as the investigation is done in the recumbent position infective material may pass back from the pharynx. A leucocytosis found in the fluid would be good evidence, but a positive diagnosis cannot safely be made from the finding of bacteria unless the film shows large numbers. My personal experience is that maxillary sinusitis is far more common than sphenoidal. I am, Sir, yours faithfully,

London, W., Dec. 10th, 1923. T. B. JOBSON.

THE TREATMENT OF LIVER ABSCESS BY ASPIRATION.

To the Editor of THE LANCET.

SIR,—In THE LANCET of May 12th, 1923, there appeared an article on this subject written by Drs. P. Manson-Bahr, G. C. Low, J. J. Pratt, and A. L. Gregg. I am a Government medical officer working far from any proper hospital and with little in the way of medical equipment. Soon after reading this article I had the opportunity of treating a case of liver abscess on these lines with excellent results. In my experience liver abscess can now be treated in the out-patient department or in a dispensary with even more simple instruments than those of the London School of Tropical Medicine; in some cases not even a local anæsthetic is necessary.

On Sept. 29th, 1923, an adult male came to the dispensary here complaining of abdominal pain and swelling of legs. On examination he was thin, with normal pulse and temperature; the right side of the abdomen was occupied by a tumour, large, round, and tense—looking as though there were a child's inflated football in the abdomen—and reaching well below the umbilicus level. There was also pressure œdema of both legs. On palpation the tumour was tender, and deep fluctuation was felt.

Without employing any local anæsthetic, I passed into the tumour, at its most prominent point in the nipple line just above the umbilicus, the needle (2½ inches long) of an ordinary exploring syringe (capacity 2 dr.). The needle had to be pushed in right up to the hilt before the abscess cavity was reached, and then typical thick anchovy-paste liver-abscess pus came out under moderate pressure. As it took such a long time to evacuate the pus with this small syringe (I have no Potain's aspirator), by means of a small piece of rubber tubing I connected the needle with a small metal ear syringe of 1½ oz. capacity, and by this means in about half an hour removed 35 ounces of pus. I then injected 1 g. of emetine hydrochloride intramuscularly, and repeated the injection daily for 15 days. I kept the patient under observation, but gave no other treatment.

The patient made a rapid and uneventful recovery. By the end of the first week the liver was three fingers-breadth below the costal margin, and the œdema of the legs had gone. Treatment was stopped on Oct. 13th, the fifteenth day; the liver was then normal and no longer tender, and the patient was putting on flesh. Six weeks later he was quite well.

My experience of the resistance of natives to liver abscess is the reverse of that mentioned in the paper referred to above. I do not see many cases here, and have met with none in Europeans. The case I have narrated must have had his abscess for several months, and was not acutely ill when I saw him. Ten years ago I had a similar case of seven months' history in an educated native. I operated by the transthoracic route, resecting a rib, and the man is now alive and well.—I am, Sir, yours faithfully,

M. C. F. EASMON, M.B., B.S. Lond.,
Medical Officer, Sierra Leone, W. Africa.

Nov. 26th, 1923.

The Services.

ROYAL NAVAL MEDICAL SERVICE.

Surg.-Lt. F. G. Hunt to be Surg. Lt.-Comdr.

ROYAL ARMY MEDICAL CORPS.

Lt.-Cols. E. B. Knox and J. Matthews retire on ret. pay.

Capt. A. Rodd, from the half-pay list, is restd. to the estabt.

Capt. W. L. Partridge retires, receiving a gratuity.

TERRITORIAL ARMY.

Capts. R. C. Clarke and O. Teichman to be Majs.

Lt. M. D. Mackenzie is restd. to the estabt.

W. B. McCall and E. L. Hancock to be Lts.

ROYAL AIR FORCE.

Squadron Leader P. T. Rutherford is granted a permanent commission in the rank stated.

J. M. Rourke is granted a short service commission as a Flying Officer.

CREMATION IN MANCHESTER.—The annual report of the Manchester Crematorium for the year ending in August, 1923, shows that 222 cremations took place as compared with 206 in the previous year and 211 in 1921. Since the opening of the crematorium in 1892 the number of cremations amounts to 3826. In Great Britain for the year just ended the total number of cremations was 1923 against 2058 in 1921–22. In Manchester the cremation fees during the year totalled £1338.

SUPPLY OF INSULIN IN IRELAND.—In a letter to the lay press Sir John Lumsden, Vice-Chairman of the Joint Committee of the British Red Cross Society and Order of St. John, announces the steps that are being taken to provide a supply of insulin for poor patients in Ireland. Since the Free State Government finds itself unable to provide any funds at present for this purpose, the Joint Committee has made a grant of £500 and Sir John Lumsden appeals to the public to provide an equal sum. It is calculated that £1000 would provide enough insulin to supply urgent cases for a considerable time. An Irish correspondent informs us that the Connaught Laboratories at Toronto have already promised to supply insulin at very reduced prices for the use of poor patients in hospitals, and the Joint Committee hopes to be able to obtain equally generous terms. In order that the insulin may not be wasted in indiscriminate use and on unsuitable cases, the Joint Committee is establishing a small insulin committee of physicians and others interested to advise as to distribution. It is to be hoped that the sum for which Sir John Lumsden appeals may speedily be forthcoming.

Obituary.

SIR FREDERICK TREVES, BART., F.R.C.S. ENG., M.D., M.CH. (HON. CAUSA), T.C. DUB., LL.D. ABERD.

Sir Frederick Treves, whose death occurred in a nursing home at Lausanne on Dec. 7th in his seventy-first year after a brief illness from peritonitis, was a man of many-sided interests, who enjoyed a great reputation not only as a surgeon, but also as an entertaining writer of books on travel at home and abroad. He was born at Dorchester in 1853 of old Dorset yeoman stock, and after two impressionable years under the tutelage of the Rev. W. Barnes, "the Dorset poet," he entered the Merchant Taylors' School, then in Suffolk-lane in the City. His medical education began at the London Hospital, where he qualified as Licentiate of the Society of Apothecaries, and a year later, in 1875, he obtained his Membership of the Royal College of Surgeons of England, the Fellowship following in 1878.

Happy chance played a large part in selecting the path of Treves's future activities. Though intending to settle down as a general practitioner in Derbyshire, he was induced by a friend on the staff of the London Hospital to take up a hospital career. He obtained the post of surgical registrar at the London Hospital, and from that beginning he rapidly won his way to the highest staff appointments. He took an active share in the management of the medical school and was largely responsible for founding the Students' Union. In 1881 he was appointed Wilson Professor of Pathology at the Royal College of Surgeons, and five years later combined these duties with those of the Hunterian Professor of Anatomy at the same College—a striking testimony to his skill as an anatomist and as a teacher. His Hunterian lectures, based on hundreds of original dissections, shed new light on many hitherto obscure or erroneous anatomical conceptions. A "Manual of Surgical Applied Anatomy," first published in 1881, was translated into several languages and still holds a place in the regard of students. Treatises of a very practical nature followed on scrofula, hæmophilia, and hernia. Treves was one of the pioneers of abdominal surgery; at this time, before the revolution of Lister, an almost virgin field. His essay on Obstruction of the Intestine (1884) gained him the Jacksonian Prize of the Royal College of Surgeons, as well as high commendation from Sir Spencer Wells. Later on came the "Manual of Operative Surgery" and the popular students' handbook of "Surgical Operations." So great in fact was Treves's professional activity as a surgeon, a teacher, an examiner, and a steady contributor to medical literature that at the early age of 45 he found himself compelled to give up hospital practice in the interests of his private patients.

On the outbreak of the South African War Treves was appointed consulting surgeon to the Forces, and took part in the Relief of Ladysmith. Deeply impressed by the lack of efficient medical service in the field—though well-intentioned helpers were numerous enough—he became one of the founders of the British Red Cross Society, and was the first chairman of its executive committee. "The Tale of a Field Hospital" is the poignant story of his experiences in the campaign. Although he never strove for public honours, in 1900 he was appointed surgeon extraordinary to Queen Victoria, and in the following year serjeant surgeon to King Edward, from whom he received the decorations of C.B., K.C.V.O., and G.C.V.O. In June, 1902, shortly before his coronation, King Edward fell seriously ill, the condition being diagnosed as perityphlitis. Surgical interference was advised, and "to Sir Frederick Treves was committed the heavy responsibility of performing the operation."[1] The operation, as is well known, was completely successful, and as a result, Treves's reputation stood higher than ever. He was created a baronet, and his practice became little short of overwhelming. In 1908, although in full vigour, he retired from practice, feeling, doubtless, that he had reached his zenith as an operator. The key to his full and distinguished life might be put in his own words, when delivering his rectorial address at Aberdeen University in 1908: he impressed upon the students that "the real factors in success were health, serviceable knowledge, sympathy and honesty, industry being presupposed."

"H. T.," a life-long friend, writes of him: "Treves was of a nature very precise. His habit of mind was to reduce all subjects to headings, duly numbered, with the result that he often missed the delicate side of things. Nevertheless, this sense of extreme order made him one of the best teachers a medical student could have. He was therefore followed in the wards by a vast crowd, and every case made simple for the ordinary mind. With his operations he was the same—a clear exposition at first, followed by a complete success. His method of teaching was rendered more attractive by a constant flow of sarcasm directed against his dressers or even his house surgeon. At home he lived in the simplest way, everything arranged to allow him the most complete use of his time. He was up very early, doing his writing before breakfast. His happiest days were spent in and on the sea—he held himself the certificate of a master mariner—and there was between him and the sailors and fishermen some natural bond. In earlier times he might have been a great explorer; as it was, a very real gift for exact observation and discovery was turned to other uses, sometimes perhaps to his own regret."

Treves did not retire to idleness, but from 1908 up till the outbreak of the late war, he travelled and wrote widely. His books include accounts of the West Indies, Uganda, Palestine, and Italy. He spent several years at the Thatched House Lodge in Richmond Park, lent him by King Edward, whose close and confidential friend he remained, a friendship which was continued by King George. During the European war Treves again took up the burden of professional life and was appointed President of the Headquarters Board at the War Office. He was also a member of the War Office Sanitary Committee, and he devoted himself to the Red Cross to the point of seriously straining his physical powers. Since 1920 he had lived in France, writing several delightful books, including "The Riviera of the Corniche Road" and "The Lake of Geneva." His last, "The Elephant Man and Other Reminiscences" was reviewed in these columns but recently, and gives an insight into Treves's sympathy and understanding. Anyone who had worked for years, as he did, in a great hospital must have accumulated a store of facts dealing with various aspects of human nature in which the pathetic and the comic were intimately blended; but few, indeed, could put their recollections into print with the blend of humour and charity which characterised this book.

Sir Frederick Treves married in 1877 the youngest daughter of Mr. A. S. Mason, of Dorchester, by whom he had two daughters. The elder is the wife of General Sir Charles Delmé-Radcliffe; the younger died of acute appendicitis. His body was cremated at Lausanne preparatory to burial in this country.

[1] THE LANCET, 1902, ii., 29.

ARTHUR WILLIAM HARE, M.B., C.M., F.R.C.S. EDIN.

ON Nov. 25th, at Gateshead-on-Tyne, the death took place from syncope following pneumonia of Arthur William Hare, sometime professor of surgery at Owens College, Manchester. Born at Darlington in 1861, he was the younger surviving son of the late Mr. Samuel Hare, private secretary to the late Mr. Arthur Pease, M.P. He was educated at Oliver's Mount School, Scarborough, and at Edinburgh University, where he graduated with honours in medicine and surgery in 1882. Subse-

quently he obtained the Fellowship of the Royal College of Surgeons of Edinburgh by examination. Prior to graduation Mr. Hare had been appointed resident surgeon in Edinburgh Royal Infirmary, and in preparation for the duties of the post he spent six months in the medical schools at Vienna under Prof. Bilroth and Dr. Wölfler. After visiting the surgical clinics of Halle, Leipzig, and Berlin, he returned to Edinburgh and became assistant in the Surgery Department at the University and house surgeon to the Royal Infirmary under the late Prof. Chiene. In 1883 Mr. Hare returned to Berlin at the desire of Mr. Chiene to establish a bacteriological laboratory for observation and research, and by the courtesy of the German Imperial Board of Health officials, he was enabled to study bacterial research in Koch's laboratory. He was elected senior president of the Royal Medical Society, Edinburgh, for the year 1883–84, and in 1885 he published, with the late Prof. G. Sims Woodhead, a work on the ætiology of infective diseases called "Pathological Mycology." In 1886 Mr. Hare was elected a Fellow of the Royal Society, Edinburgh, and in 1888 he was appointed professor of surgery at Owens College, Manchester. He acted as honorary surgeon to Ancoats Hospital, Manchester, and examiner in surgery at Victoria University, but owing to a breakdown in health he resigned these posts in 1893. After travelling for his health in America, Mr. Hare settled at Newquay, Cornwall, where he became widely known as a surgeon. In 1915 he took up a commission in the R.A.M.C., but was forced to resign on account of ill-health some nine months later, and soon afterwards underwent a severe operation at Newcastle-on-Tyne. On recovery he became school medical inspector for the borough of Gateshead, which position he held until his death. Mr. Hare's systematic works included "Cranial Surgery," "Bandaging," and "The Surgical Treatment of Intracranial Tumours," while he contributed articles to THE LANCET,[1] "Chambers's Encyclopædia," and other publications. As a speaker Mr. Hare possessed unusual power, and his integrity of character, his courtesy, culture, and unfailing sympathy endeared him to all with whom he came in contact. His loss will be deeply felt by a wide circle of friends.

CHARLES ERNEST ASHTON, M.R.C.S. ENG.

Charles Ernest Ashton, who died at Reims on Nov. 24th, was a member of the ancient Lancashire family of that name; he was born on August 16th, 1855, the younger son of Commander Herbert Ashton, R.N., of Hefferston Grange, Cheshire. His father saw much active service afloat between the years 1808 and 1816, being present at the embarkation of Moore's army after the battle of Corunna, the siege of San Sebastian, and the passage of the Bidassoa by Wellington's army, as well as assisting at the cutting out of innumerable brigs in the Bay of Biscay. The son, Charles Ernest, was educated at the Oratory School, Edgbaston, under Cardinal Newman. Later he matriculated at the University of London and became a student at St. Bartholomew's Hospital, where he served as dresser to Mr. Callender, qualifying M.R.C.S in 1881. He spent a good many years in holding resident appointments in this country; he was assistant house surgeon to the Derby Infirmary, house surgeon to the Wolverhampton General Hospital, and resident medical officer for four years to the French Hospital, London; in 1888 he spent nine months in Dublin at the Rotunda Hospital. After this he retired from the practice of his profession and went to live in France, dividing his time between Paris and Nice; he will be much missed by his poorer neighbours, for although he did not engage in practice, he was ever ready to help with advice and gratuitous treatment. His cheerful disposition enabled him to face his last trying illness, of more than 18 months' duration, with unabated courage.

[1] Cranial Surgery, THE LANCET, 1888, i., 207, 307, 407.

Medical News.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION.—A variety of post-graduate courses have been arranged for January, 1924, and full particulars of each of those mentioned below can be obtained from the Secretary of the Fellowship at 1, Wimpole-street, W. A further course in children's diseases will be given at the Infants Hospital, Vincent-square, from Jan. 7th to 19th. Clinical lectures and demonstrations will be given each afternoon, and in addition visits will be paid to places of interest in connexion with infant welfare work. An intensive course in urology will be given at St. Peter's Hospital for Stone, Covent Garden, from Jan. 7th to Feb. 2nd, inclusive. The course will consist of clinical work and lecture-demonstrations by members of the staff each afternoon, covering all aspects of urinary disease. A course of lectures in the diagnosis and treatment of common diseases of the nervous system will be given at the West End Hospital for Nervous Diseases from Jan. 7th to Feb. 11th in the out-patient department. A series of eight demonstrations in the diagnosis and treatment of the acute infectious fevers will be given by Dr. Frederic Thomson at the North-Eastern Fever Hospital, Tottenham, on Wednesday and Saturday mornings at 11 A.M., from Jan. 9th to 26th.

Dr. Aubrey Montague, chief medical officer, Fiji, has been appointed a member of the executive council of the Colony.

HUNTERIAN SOCIETY.—The second dinner meeting of the Hunterian Society will be held at Simpson's Restaurant, Cheapside, on Dec. 17th, at 7.30 P.M. After dinner a discussion on the Influence of Ductless Glands in Infancy, Middle, and Old Age will be held; the following speakers will take part: (1) General, Dr. Langdon Brown; (2) Infancy and Childhood, Dr. J. H. Thursfield; (3) Middle and Old Age, Dr. Leonard Williams; (4) Psychological, Dr. Crichton Miller.

SOCIETY OF APOTHECARIES: LIVERY DINNER.—This dinner was held in the ancient hall of the Apothecaries' Society on Dec. 4th, the Master, Dr. Thomas Wakefield, presiding. Among the guests were the Medical Directors-General of Navy and Army, the Presidents of the Royal Colleges of Physicians and Surgeons, and the re-elected Member of Parliament for the University of London. The toast of "The Navy, Army, and Air Force" was proposed by the Master and responded to by Vice-Admiral J. Chambers and Sir William Leishman. "The Royal Colleges and the Universities" was proposed by Dr. A. D. Brenchley, Senior Warden, and in response Sir John Bland-Sutton devoted to the consideration of faith in drugs a witty speech in which historical knowledge, business acumen, and professional liveliness were duly blended. Sir Sydney Russell-Wells also replied. "The Society of Apothecaries of London" was proposed by Dr. T. J. Duffield, and responded to by Dr. F. Gordon Brown, Senior Past Master of the Society. Dr. T. Vincent Dickinson, Junior Warden, proposed "Our Guests." The occasion was attended with that genial solemnity and lavish hospitality that distinguishes the society's banqueting and renders public eating something more than a dull though satisfying repast. A programme of music was contributed by Miss F. Holderness, Miss W. Stocken, and Mr. George Ison.

DONATIONS AND BEQUESTS.—The late Miss Margaret Lucy Augusta Boileau, M.B., B.S., of Wymondham, Norfolk, left by will, among other bequests, £200 to the Norfolk and Norwich Staff of Nurses, Limited; £100 to the Norfolk and Norwich Hospital; £100 to the Royal Free Hospital, Gray's Inn-road, W.C.; and £100 to the Elizabeth Garrett Anderson Hospital, Euston-road, N.W.—Mr. James Smith Kelvinside, Glasgow, left £1250 to the Royal Infirmary, Glasgow, to endow a bed in memory of his mother; £500 each to the Western Infirmary, the Victoria Infirmary and the Royal Samaritan Hospital for Women, Glasgow; £300 to the Royal Hospital for Sick Children Glasgow; £250 to the East Park Home for Infirm Children; £200 each to the Royal Maternity and Women's Hospital, and the Association for the Relief of Incurables; and £100 to the McAlpin Nursing Home, Glasgow.—By the will of the late Mr. Willsher Mannering, of Dover, the testator left £1000 to the Royal Victoria Hospital, Dover.—Sir John Bell, a former Lord Mayor of London, has given £1000 to the fund for building a new wing to the King Edward VII. Hospital as a war memorial.

THE house and library of the Royal Society of Medicine will be closed from Monday, Dec. 24th, to Thursday, Dec. 27th, both days inclusive.

CHELSEA CLINICAL SOCIETY.—A meeting will take place at the Club Room, St. George's Hospital, on Dec. 18th, at 8.30 P.M., when a discussion on the Manipulative Treatment of Joint Diseases will be opened by Mr. Frank Romer.

A CONVERSAZIONE, at which the Prince of Wales will be present, will be held at the Middlesex Hospital on Dec. 18th, from 8.30 to 11 P.M. Scientific exhibits will be on view and demonstrations will be held, and research departments and new laboratories will be open for inspection.

MIDDLESEX HOSPITAL MEDICAL SCHOOL.—Sir James Kingston Fowler will deliver an Emeritus Lecture, illustrated by cinematograph, to-day, Friday, Dec. 14th, at 3 P.M., in the large lecture theatre of the Medical School. The subject of the lecture will be a Tuberculosis Settlement.

UNIVERSITY OF MANCHESTER.—Prof. S. J. Hickson, M.A., F.R.S., who has occupied the Beyer Chair of Zoology since 1894, will retire at the close of the present session in September, 1924, under the age limit.

GLASGOW ROYAL INFIRMARY: THE LISTER WARD.—At a meeting of the board of management of the infirmary it was decided by a majority to proceed with the demolition of all that portion which remains of the old infirmary buildings. This includes the Lister Ward, the preservation of which has been so strongly urged from many quarters, as reported in our columns recently.

LIVERPOOL PSYCHOLOGICAL SOCIETY.—This society has now been inaugurated under the presidency of Prof. Alexander Mair, of the University of Liverpool, supported by Dr. Betts Taplin as Vice-President, and an influential committee. The society intends to pursue the systematic investigation of the recent developments of the science. Further information can be obtained from the Secretary of the Society, the University, Liverpool.

A COMFORT FOR INVALIDS.—The combination chair for invalids devised by Sir Charles Brown, F.R.C.S., and briefly described in these columns (July 7th, p. 49) has now been presented by the inventor to the Preston Royal Infirmary, the Preston St. Joseph's Hospital, and to King's College Hospital, Denmark Hill, London, where it can be seen in use.

SMALL-POX IN ENGLAND AND WALES.—The number of cases of small-pox notified in the sanitary areas of England and Wales shows a tendency to rise from week to week. During the week ended Dec. 1st, 45 cases were notified as follows: Derbyshire 12 (Heanor 4, Blackwell R.D. 8); Gloucestershire 13 (East Dean R.D.); Notts 16 (Hucknall 13, Kirkby-in-Ashfield 2, Stapleford R.D. 1); Yorks W.R. 4 (Adwick-le-Street 3, Bentley-with-Arksey 1). It will be noted that a majority of cases are occurring within certain small and restricted areas. Spain is the source of a recently imported case of small-pox in the person of a resident in Wood Green, Middlesex, who had recently been on a business visit to that country. He appears to have contracted the disease there on or about Nov. 22nd, and travelling overland to London reached this country on Dec. 7th. It is hoped that the prompt measures taken will have sufficed to check the spread of infection after his arrival at his home, but there is risk from the fact that, as his eruption came out on his way home and presumably rendered him infectious by the time he reached this country, he may have infected other people met on his journey between his port of arrival and final destination. His case is described as being not severe.

BATH CLINICAL SOCIETY.—A meeting was held at the Royal United Hospital on Dec. 7th, Dr. W. P. Kennedy, the President, being in the chair, when the following cases and specimens were shown:—Dr. R. G. Gordon: Osteitis Deformans and a case of Arthritis treated by Protein Shock. Dr. C. A. Marsh: Diabetes treated by Insulin. Dr. F. G. Thomson: Idiopathic Familial Muscular Atrophy. Mr. F. Fraser: (1) Repair of the Lower Eyelid by Pedicle Flap; (2) Pegging of Hip-joint for Intracapsular Fracture; (3) Elving's Operation of Sympathectomy for Progressive Gangrene of Both Lower Limbs. Mr. C. Terry showed a slide of a mixed-celled sarcoma removed from the sciatic nerve. Dr. Preston King read a paper entitled National Health. He dealt with the defects of the panel system and the necessity of a closer coöperation between the profession and the State in the province of preventive medicine.

Medical Diary.

Information to be included in this column should reach us in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning.

SOCIETIES.

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

MEETINGS OF SECTIONS.

Monday, Dec. 17th.

SPECIAL DISCUSSION: at 5 P.M.
On Chronic Abdominal Pain in Nervous Women, to be opened by Dr. Robert Hutchison, followed by Dr. Fairbairn, Dr. James Collier, Dr. Crichton Miller, Dr. E. I. Spriggs, Dr. M. Culpin, and Dr. J. A. Hadfield.

Tuesday, Dec. 18th.

GENERAL MEETING OF FELLOWS: at 5 P.M.
Ballot for election to the Fellowship. (Names already circulated.)

Wednesday, Dec. 19th.

HISTORY OF MEDICINE: at 5 P.M.
Papers:
Mr. A. G. T. Fisher: The History of Internal Derangements of the Knee-joints.
Mr. Warren R. Dawson: A Contribution to the History of Egyptian Medicine.

Thursday, Dec. 20th.

DERMATOLOGY: at 5 P.M. (Cases at 4 P.M.).
Cases:
Dr. G. Pernet: Cheilitis Glandularis (serpiginosa).
Dr. H. W. Barber: (1) Lichen Nitidus; (2) Tuberculides associated with Rheumatoid Arthritis, and Tubercular Peritonitis; (3) A Case for Diagnosis.

Friday, Dec. 21st.

ELECTRO-THERAPEUTICS: at 8.30 P.M.
Papers:
Dr. Ulysses Williams: Fallacy of the Dropped Colon.
Dr. H. A. Harris: Some Problems in Bone Growth.
Dr. R. W. A. Salmond: The Teaching of Normal Radiography and Radioscopy.

HUNTERIAN SOCIETY.
MONDAY, Dec. 17th.—Dinner Meeting at Simpson's Restaurant, Cheapside. Discussion on the Influence of Ductless Glands. (1) General: Dr. Langdon Brown; (2) Infancy and Childhood: Dr. Thursfield; (3) Middle- and Old-age: Dr. Leonard Williams; (4) Psychological: Dr. Crichton Miller.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

WEST LONDON POST-GRADUATE COLLEGE, West London Hospital, Hammersmith-road, W.
MONDAY, Dec. 17th.—10 A.M., Mr. Maingot: Surgical Pathology. 12 noon, Mr. Simmonds: Applied Anatomy. 2 P.M., Mr. Bishop Harman: Eye Dept.
TUESDAY.—12 noon, Dr. Burrell: Chest Cases. 2.30 P.M. Mr. Tyrrell Gray: Surgical Wards. 2 P.M., Mr. Sinclair: Surgical Out-patients.
WEDNESDAY.—10 A.M., Dr. Saunders: Medical Diseases of Children. 2 P.M., Dr. Burnford: Medical Wards. 2 P.M., Dr. Owen: Medical Out-patients.
THURSDAY.—10 A.M., Dr. Grainger Stewart: Neurological Dept. 11 A.M., Mr. Simson: Gynæcological Demonstration. 2 P.M., Dr. Scott Pinchin: Medical Out-patients.
FRIDAY.—10 A.M., Dr. Drummond Robinson: Gynæcological Operations. 12 noon, Mr. Endean: Venereal Diseases. 2 P.M., Mr. Banks-Davis: Throat, Nose, and Ear Dept.
SATURDAY.—9.30 A.M., Dr. Burnford: Bacterial Therapy. 10 A.M., Dr. Saunders: Medical Diseases of Children. 10 A.M., Mr. Banks-Davis: Throat, Nose, and Ear Operations.
Daily, 10 A.M. to 6 P.M., Saturdays, 10 A.M. to 1 P.M.: In-patients, Out-patients, Operations, Special Departments.

LONDON HOSPITAL MEDICAL COLLEGE, Mile End, E.
MONDAY, Dec. 17th.—4.30 P.M., Dr. J. Parkinson: Graphic Methods in Heart Disease.
WEDNESDAY.—4.30 P.M., Concluding Lecture.

THE PEOPLE'S LEAGUE OF HEALTH, 12, Stratford-place, Oxford-street, W.
Eight Lectures on the Mind and What We Ought to Know About It, at Hamilton House, Mabledon-place, W.C.
WEDNESDAY, Dec. 19th.—6 P.M., Eighth Lecture, Dr. Tredgold: Mental Deficiency.

MANCHESTER ROYAL INFIRMARY.
TUESDAY, Dec. 18th.—4.15 P.M., Dr. J. M. W. Morison: An Introduction to the Study of Radiography.

UNIVERSITY OF SHEFFIELD POST-GRADUATE LECTURES.
TUESDAY, Dec. 18th.—3.30 P.M., Prof. Douglas: The Pathology of Pneumonia.

UNIVERSITY OF BRISTOL POST-GRADUATE DEMONSTRATIONS.
FRIDAY, Dec. 21st.—(At Boscombe.) Dr. C. E. K. Herapath: Auricular Fibrillation and Flutter.

Appointments.

CAVE, P. N., M.D., B.Ch. Oxf., has been appointed Medical Officer of Health for West Kent.
CONDY, R., M.B., B.Ch. Belf., D.P.H., Assistant Medical Officer of Health for Bury, Lancs.
FORD, A. P., M.R.C.S., L.R.C.P. Lond., D.P.H., Deputy County Medical Officer of Health for Hertfordshire.
FRASER, J. A., M.B., Ch.B. Edin., Assistant Medical Officer at St. Helens.
GAFFIKIN, P. J., M.D., M.Ch. Belf., D.P.H., Medical Officer and Assistant County Medical Officer for the Urban District of Braintree and the Rural Districts of Braintree and Dunmow.
LAWSON, M. A., L.M.S.S.A., Second Medical Officer at St. Mary's Hospital, Plaistow.
LINDSAY, W. J., M.D., B.Ch. Camb., Assistant Surgeon to Out-patients, Royal Eye Hospital, Southwark.
PYE-SMITH, C. D., M.B., B.S. Lond., F.R.C.S. Eng., one of the Medical Referees under the Workmen's Compensation Act for County Court Circuit No. 12, more particularly attached to the Huddersfield County Court.
RANSOM, J. S., Medical Officer and Assistant County Medical Officer for the Urban District of Halstead and the Rural Districts of Halstead and Belchamp.
VLASTO, M., M.B., B.S. Lond., F.R.C.S. Eng., Assistant Surgeon to the Ear, Nose, and Throat Department, West London Hospital.
WILSON, H., M.D., B.S. Lond., Medical Officer of Health for Southwark.

Manchester Royal Infirmary: ROBINSON, G. T., M.B., Ch.B. Manch., House Surgeon; JONES, A. M., M.B., Ch.B. Manch., and APPLETON, J. H., M.B., Ch.B. Manch., House Physicians.

Certifying Surgeons under the Factory and Workshop Acts BARROW, R. M., M.B., B.S. Durh. (Long Sutton); COLLIER, H. E., M.B., Ch.B. Edin. (Redditch).

Vacancies.

For further information refer to the advertisement columns.

Belgrave Hospital for Children, 1, Clapham-road, S.W.—Asst. P. 50 guineas.
Bethnal Green Board of Guardians Hospital, Cambridge-road.—Sen. Asst. M.O. £500.
Birmingham Orthopædic Centre (Ministry of Pensions).—Two Jun. M.O.'s. Each £350.
Bradford Royal Infirmary.—Pathologist. £600.
Bristol General Hospital.—Sen. Res. M.O. £250.
Cancer Hospital, Fulham-road, S.W.—H.S. £100.
Colonial Service, British Guiana.—Three Asst. Govt. M.O.'s. £500.
Dreadnought Hospital, Greenwich.—H.P. £150.
Dudley, Guest Hospital and Dispensary.—H.S. and Asst. H.S.
Dundee Royal Infirmary.—Hon. Asst. Aural S.
Eastbourne, Princess Alice Memorial Hospital.—Res. H.S. £175.
Elizabeth Garrett Anderson Hospital, Euston-road.—Clin. Assts.
Exminster, Devon Mental Hospital.—Third Asst. M.O. £300.
Harefield, Middlesex County Tuberculosis Sanatorium.—Third Asst. Res. M.O. £400.
Hastings, Royal East Sussex Hospital.—Hon. S. and Hon. P.
Hospital for Sick Children, Great Ormond-street, W.C.—Biochemist. £600.
Hull, Victoria Hospital for Sick Children, Park-street.—R.M.O. £100.
London Lock Hospital, 91, Dean-street, W.—Clin. Assistantships.
Loughborough and District General Hospital and Dispensary.—Res. H.S. £175.
Manchester Royal Eye Hospital.—H.S.
Northampton General Hospital.—Hon. Surg. to Ear, Nose, and Throat Department. H.S. £150.
Oldham Royal Infirmary.—Two H.S.'s. Each £200.
Plymouth Royal Eye Infirmary.—Hon. Anæsthetist.
Queen Mary's Hospital for the East End, Stratford, E.—Two H.S.'s. £150.
Royal Army Medical Corps.—Commissions.
Royal Naval Dental Service.—Five Dental Surgeons.
Sheffield Royal Infirmary.—Ophth. H.S. Also Asst. Cas. O. £100.
Tunbridge Wells Eye and Ear Hospital.—Hon. Aural S.
University College Hospital Medical School, W.C.—Radcliffe Crocker Travelling Scholarship in Dermatology. £280.

The Chief Inspector of Factories, Home Office, London, S.W., announces a vacant appointment at St. Helens, Lancs.

Births, Marriages, and Deaths.

BIRTHS.

MOULSON.—On Dec. 7th, at Stone Field, Kidbrook-grove, Blackheath, the wife of Captain Geoffrey Moulson, R.A.M.C., of a daughter.

MARRIAGES.

BLACKWELL—RICE.—On Nov. 28th, at the Minoriten Church, Cologne, Arthur Seal Blackwell, Captain, R.A.M.C., to Mary Georgina Rice, daughter of John Rice, of Fermoy, Ireland.

DEATHS.

BURGESS.—On Dec. 3rd, at Streatham High-road, S.W., William Frederick Richardson Burgess, M.D. Lond., O.B.E., in his 75th year.
SMITH.—On Dec. 6th, at Willow-road, N.W., of pneumonia, John B. Smith, M.A., M.B., Ch.B., aged 74.
TREVES.—On Dec. 7th, of peritonitis, in a nursing home at Lausanne, after a brief illness, Sir Frederick Treves, Bart., G.C.V.O., C.B., aged 70.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

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Three-quarters Column	4	10	0	Three-quarters Page	9	0	0
Whole Column	6	0	0	Whole Page	12	0	0

Public Companies (Prospectuses) per column line 2*s.* 6*d.*

POSITION PAGES.—Terms on application.

THE *National Institute for Research in Dairying* (University College, Reading) has removed from its temporary premises at 7, Redlands-road, Reading, to Shinfield Manor, near Reading.

THE "MINTITE" PATENT FINISH HOT-WATER BOTTLE.—With reference to the notice of the "Mintite" patent finish hot-water bottle in THE LANCET of Sept. 15th, we are asked to state that manufacturing licensees are attaching a two years' guarantee to these productions. Supplies are now obtainable from many of the principal distributors, including Boots Pure Drug Co., Ltd., and the London Rubber Company's various branches.

Notes, Comments, and Abstracts.

THE LIFE AND TIMES OF WILLIAM CLIFT.[1]

BY SIR ARTHUR KEITH, M.D., LL.D. ABERD., F.R.C.S. ENG., F.R.S.,
CONSERVATOR OF THE MUSEUM OF THE ROYAL COLLEGE SURGEONS OF ENGLAND.

[Sir Arthur Keith began by recalling the fact that William Clift, first conservator of the Museum of the Royal College of Surgeons of England, arrived at the house of John Hunter in Leicester-square on Feb. 14th, 1792, his own seventeenth birthday and the sixty-third birthday of John Hunter. It was said that he carried with him certain indentures wherein Hunter had undertaken to teach him "in his best manner," to draw, write, and dissect. The bond between the two men was soon to be broken; Clift had only served his master for 20 months when the catastrophe at St. George's Hospital left him stranded in Hunter's derelict museum. Sir Arthur Keith continued in the following sense:—]

For fifty years William Clift was the honest steward of the great collection which Hunter left behind and the undaunted upholder of his name and fame. There was more than a mere coincidence of birthdays to link these two men together; as Clift aged those who had known Hunter saw in him a remarkable physical likeness to the master. Both were small active men; Hunter's height was only 5 ft. 2 in. To those who insinuated that this likeness was due to more than a coincidence Clift would reply: "If I thought such were true there is not a duke in London I would touch my hat to."

Parentage and Upbringing.

Clift's birthplace was a flour-mill at Bodmin, swept away when the London and South-Western Railway built its station about a mile to the west of the centre of the town. In 1775, when his youngest son William was born, the affairs of the miller, Robert Clift, were hastening from bad to worse; he had to leave the mill, and three years later died in Bodmin at the age of 58, leaving his wife, Joanna Courts, and his family in poverty. The widow and daughters earned a precarious livelihood by carding and spinning wool in the winter and by working in the fields in other seasons—each member earning from 4*d.* to 6*d.* a day. In 1783, when Clift was 8 years of age, his mother died, and he entered the service of Mr. George King, a nurseryman at Bodmin, at 4*d.* a day. Two or three years later, in a drunken fit, King chased his apprentice from the nursery; Clift drew a graphic caricature of the incident, which secured his discharge from the nurseryman's employ. He tried to enlist, and then found service in Bodmin with a farmer and corn-merchant. Here he might have remained, for he had ingrained within him that spirit of timidity and tendency to self-criticism which make men seek for service rather than for command, but often makes such men the hardest judges of their fellows; but at that time the Priory near Bodmin Church was occupied by Major Gilbert, whose wife had been at school with Anne Home, John Hunter's wife. They knew at the Priory that Hunter's draughtsman, amanuensis and assistant in the museum, William Bell, had accepted a surgeoncy in Sumatra, and for three years Hunter had found no one fit to succeed him; upon Mrs. Gilbert's recommendation Clift was suddenly transported from a poverty-stricken home in Cornwall to one of the most remarkable households which London has ever seen.

Hunter's House and Museum.

The household in which young Clift now found himself an inmate stretched from Leicester-square eastwards to Castle-street—now converted into Charing Cross-road. Our intimate knowledge of the shape and size of the establishment we owe to Clift; 40 years after he first entered it, he sat down late at night and drew a ground plan of Hunter's house. The property, which Hunter had acquired in 1783, was built on a long narrow strip of ground only 30 feet wide. At the Castle-street end in place of stables was a roomy dwelling where Hunter's five house-pupils had quarters. Here, too, was the dissecting-room, and quarters for Robert Haynes who looked after it, and the lecture-room; here, too, was Clift's abode. In the garden or yard stretching from the one house to the other Hunter had erected a building with an inside measurement 51 feet long and 28 feet wide. The ground floor was divided so as to serve as a reception-room towards the Leicester-square end and a lecture-room towards the Castle-street end. The lofty upper floor of this building served as a museum; round it ran a gallery, on the shelves of which stood Hunter's wonderful collection of physiological preparations—the part of the museum which became Clift's special pride. From the gallery a fossil- or cabinet-room opened off. Between the museum and the house on Leicester-square (No. 28) there was room for the building in which Hunter kept his collection of drawings and prints, and where his artist worked.

Clift found himself a member of a very large establishment. If we include the Earl's Court building, which was really an experimental station run in connexion with Leicester-square, there were 50 people depending on Hunter for their sustenance or pay. For Mrs. Hunter and for Miss Hunter (afterwards Lady Campbell) Clift acquired and retained an unbounded respect and devotion. With regard to the professional activities of the house, it was early in the morning before the professional round commenced, and late in the evening and night after it was finished, that William Clift had his busy time. He had to fetch, carry, inject, draw, display structures with a scalpel, write fair his master's rough notes of dissections, of clinical observations, and of new thoughts and ideas which had occurred in the course of the day's round. During the 30 years Hunter had been researching and building up his museum the subjects of his inquiry were ever broadening, new accounts had to be continually opened in his scientific ledgers, and old general accounts distributed under a series of new headings. Hunter's museum was but a concrete illustration of the contents of his manuscripts.

Mr. Everard Home.

An important inmate of Hunter's household when Clift entered it was Everard Home, brother of Mrs. Hunter and assistant surgeon to St. George's Hospital. Hunter's health had been failing for some years; his arteries had become hard and his heart filled them with difficulty. He had need of assistance; Home lived in and helped him in his operations, did the night work, read his lectures in the class-room in the Castle-street establishment and looked after the pupils. Home was a man of no mean ability; he was recognised by his contemporaries as an excellent practical surgeon and a clear-headed man of business. He was ambitious, particularly for scientific eminence; if only his discoveries had possessed the value he placed on them his career would have been one of unqualified success. His attributes must be borne in mind if we are to understand the relationship which became established between Home and Clift, ending in the tragedy of the manuscripts.

Hunter's Death.

In the spring of 1793 war had broken out with France, and Hunter was busy with his duties to the army. The income of the house was large but the expenditure was lavish. Hunter, to get a supply of ready cash, had been borrowing; he had to accommodate urgent creditors, and Clift had no pay; but Hunter, "probably to avoid having a footman in green found writing with him in his study," provided him with new clothes. With Hunter's death on Oct. 16th, 1793, the great Leicester-square establishment came down with a crash. Mrs. Hunter had to leave the house and for a time her drawing-room was occupied by lodgers. The whole staff was dismissed save two: Mrs. Adams, the housekeeper in Castle-street, and William Clift, who was at first allowed 1*s.* a day board wages to look after the museum—an allowance afterwards commuted to £21 a year. Home sought to continue Hunter's lectures which were given under the museum, but after two years he gave up, for he was an indifferent teacher. Clift attended his second course and tried to take notes from him. The care of the museum devolved on Hunter's executors, Home and Matthew Baillie, both young men struggling for practice. Home was the senior and acting executor. Immediately after Hunter's death he became most prolific in the output of papers—both scientific and surgical. He stepped into Hunter's shoes, attempting to use the museum and Clift's services just as Hunter had done. In the intervals between Home's visits Clift studied the contents of the museum and particularly Hunter's manuscripts; he copied for his own use nearly half of Hunter's writings. During the seven years which followed Hunter's death Clift's salary was £21 per annum. In 1799, when he was 25, he married; he added to his meagre income by copying manuscripts and by drawing for Baillie, whose "Morbid Anatomy" he illustrated, for Monro of Edinburgh, Hey of Leeds, Sir Joseph Banks, and many others. Home got off cheaply; all his drawings, dissections, inquiries, and odd jobs were done for a Christmas box of five guineas, but in 1800, when the museum had passed into the keeping of the College of Surgeons, a new arrangement had to be instituted. Home promised, and Clift expected, that his salary as conservator under the College would be fixed at £100 per annum, but £80 was the sum actually fixed upon. Home undertook to make the deficiency good by purchasing every Christmas £21 worth of 3 per cent. stock and placing it to

[1] An Abstract of the Vicary Lecture delivered in the Theatre of the Royal College of Surgeons, on Dec. 7th, 1923.

Clift's credit until the capital produced an annual income of £21, a promise which he kept—and in later years claimed thereby to have been Clift's magnificent patron. For this sum Clift supplied his patron with the splendid drawings which adorn a hundred papers published by Home in the Philosophical Transactions, besides those in the great volumes on comparative anatomy; he also carried out investigations and experiments for Home year after year, looked after his papers, and was always at his beck and call.

In 1799, just before the museum passed into the care of the College, Home ordered the manuscripts to be removed from Castle-street. Clift loaded a cart with them and conveyed them to Home's house in Sackville-street.

The Board of Curators.

When the College of Surgeons took over the care of Hunter's museum, the managing body, then known as the Court of Assistants, appointed seven of its number to form a Board of Curators to look after the new charge. In the summer of 1800 the Board met at Castle-street and amongst their instructions to their newly appointed conservator were clauses instructing him to live and sleep in the museum and to accept no gratuities from visitors. Home, although not yet a member of the Court of Assistants, was present at this early meeting and volunteered, with the aid of the conservator, to prepare a complete catalogue of the collection. By 1803 Home had been elected to the Court of Assistants, and was naturally appointed a member of the Board of Curators, thus acquiring a dominant influence in the affairs of the museum. He set Clift to compile catalogues of all sections of Hunter's collection, these catalogues being mere lists of contents, but drawn up with great care and written into folio volumes with meticulous accuracy. Home was too busy looking after his hospital, his practice, and the output of scientific and professional papers to take any part in the work of cataloguing.

The New Museum.

In the summer of 1805 the trustees appointed by Parliament to see that the College of Surgeons carried out the conditions attached to its trust, met for the first time. The trustees inquired about catalogues and about lectures and were told that the College had already spent £2547 on the collection, and that, as the lease of the Castle-street museum was almost up, the College had bought for £4600 Mr. Jenner's house (No. 42), next door to the College House (No. 41), on the south side of Lincoln's Inn Fields, as the site of a new museum. The garden of No. 42 was the actual site on which the new museum was to be built. In the spring and summer of 1806 Clift moved the Hunterian collection from Castle-street and stowed it safely away in the rooms of the museum house, until the new building was erected behind; it was not until 1813 that the museum was finished and opened to visitors. The conservator's chief duty was to conduct visitors round the museum twice daily and explain its contents to them. Of this daily duty Clift never tired.

Meanwhile Everard Home, in 1808, had been appointed Serjeant Surgeon to the King; he was elected in 1811 to give the first course of lectures on Comparative Anatomy. In 1813, having become Master of the College and a baronet, he agreed to publish these lectures and persuaded the Board of Curators to spend College money on their gratis distribution.

The Board of Trustees kept urging the need of supplying proper catalogues for the museum. In 1816 Home claimed the duty and honour of preparing these catalogues, made the conservator rearrange an important section of the museum, and wrote a short guide or synopsis for this section. In 1817 he resigned from the Board of Curators and became elected to the more influential Board of Trustees. He lost no prestige with the Court of Assistants, for in 1821, when this body became known as the Council of the College, they elected him to be their first president.

Burning of the Manuscripts.

In 1823 Home placed certain fossil bones, discovered in caverns near Plymouth, at Clift's disposal. Clift described them in a paper read before the Royal Society; Home championed his election to the Society, and on May 6th, 1823, Clift became F.R.S. The relationship between Home and Clift at this time, as shown in letters, was still that of patron and servant. In July, 1823, Home informed Clift that on the night before the conversation firemen had forced their way into his house because his chimney was on fire; the damage had been done while burning Hunter's papers. "You don't mean," said Clift to the baronet, "you have burned Hunter's manuscripts?" Home said he had done as he said, to which Clift relates that he made this reply: "Then, you may as well set fire to the museum too." Apparently nothing more happened at the time; in November Home was still addressing the conservator as "My dear Clift." At this juncture, August, 1823, Home's co-executor, Dr. Matthew Baillie, died without knowing the fate which had overtaken Hunter's manuscripts.

William Clift Turns on Home.

Clift took an early opportunity of telling the chairman of the Board of Curators, Sir William Blizard, what had happened. Nothing was done then; the first step was taken in February, 1824, when Clift was called in by the Board of Curators, which included Cline, Norris, Astley Cooper, Abernethy (Clift's particular friend), Anthony Carlisle, and Lynn. Clift enumerated the manuscripts, and rightly held them to have been an intrinsic part of Hunter's collection and essential for the preparation of a real catalogue. A month later the Board requested Sir Everard to hand over the manuscripts which they had just learned were, or ought to be, in his possession. Home replied that he had destroyed the manuscripts because they were unfinished and unfit for the public eye; further, he had extracted from them and published all that was essential, and finally, that he had closed his 30 years' executorship by destroying them, which, so he wrote, Hunter had instructed him to do! In the meantime, Clift had learned that there were still some Hunterian manuscripts in existence. To a further demand made by the Board of Curators Home replied declining further correspondence with the Board. The Curators then carried the matter to the higher authority, the Board of Trustees. In May, 1824, the trustees held a special meeting—ostensibly to consider the preparation of proper catalogues for the museum. Home, on being questioned, stated that he had destroyed the manuscripts as a duty, but that he was willing to offer all possible help in the preparation of catalogues. He did help to some extent, for to the next two meetings of the trustees he sent sealed packets which were found to contain series of Hunter's own descriptions of post-mortem examination of cases.

Home died in August, 1832. Clift, in his diary, alleged that the glowing eulogium of Home pronounced at the Royal Society on that occasion was written by the deceased gentleman himself! Six weeks later Home's son handed to Robert Keate, ex-president of the College, a bundle which was found to contain Hunter's famous folio volume on "Vegetation" and also ten separate manuscript fasciculi. Seven years later young Home produced another sealed packet, which contained Hunter's folio volume on "Fossils," wherein we learn that Hunter had been thinking 40 years ahead of the geologists of his time. The open page in the Reynolds's portrait tells us that he was 70 years ahead of his contemporary anthropologists. No further discovery of Hunterian MS. had to be reported.

Clift supposed, and his supposition has usually been accepted, that Home's motive in committing his act of vandalism was to keep the public from discovering how many discoveries and observations he had stolen from Hunter's manuscripts. I do not believe this to be the true reason. In his correspondence with the Board of Curators and trustees he not only admitted but claimed as a merit that he had extracted and published all that was of value in Hunter's manuscripts before burning them! Home was vain, ambitious, extremely conventional and orthodox in his beliefs; Hunter was heterodox, and in his writings were statements which, if published, would have made the hair of the orthodox stand on end. Home declared they were unfit for the public eye, and we may safely infer that he counted Hunter as in error when he was heterodox. Home himself saw the dire fate which overwhelmed William Lawrence when he spoke out his true thoughts concerning man's relationship to animals in the theatre of the College in 1816. Home thought he was doing his old and wayward master a true service when he destroyed his unpublished manuscripts.

Conclusion.

In 1827 Richard Owen, only 23 years of age, came to Clift's rescue and showed all the world how a catalogue of a great collection of comparative anatomy should be written. There is no space in which to tell how James Paget came in 1842 to render a similar service for the pathological side of the museum. Richard Owen married Miss Clift; his father-in-law's self-confidence declined as his own grew. Clift's nerve was sapped by the death by accident, in 1832, of his son, whom he had hoped to see as his successor. In 1842 Clift was informed that his salary of £400 per annum was to continue for the rest of his life, that he was to move out of the conservator's quarters in the College, and that Owen was to move in. He retired to Stanhope Cottage, near Mornington-crescent, off the Hampstead-road, and died there in June, 1849, in his seventy-fifth year. His wife died six weeks before him. Richard Owen inscribed on Clift's tomb in Highgate Cemetery: "He carried a child-like simplicity and singlemindedness to the close of a long and honoured career."

CIRCULATION AND ASSIMILATION IN PLANTS.

Sir Jagadis Chunder Bose, F.R.S., director of the Bose Institute, Calcutta, delivered an occasional address before the Royal Society of Medicine on Dec. 6th. The substance of his remarks was as follows :—

The movement of sap inside the tree is invisible, and no accurate means have hitherto been available for the measurement of the normal rate of ascent of sap and how that rate is affected by changes of the environment. I have overcome the difficulty by devising three different types of apparatus by which the normal rate and its modification is determined with the highest accuracy. Strasburger from his experiments imagined that poisoning did not affect the ascent of sap; hence he inferred that the movement of sap cannot be due to the physiological action of living cells. This view, which found general acceptance, had the most disastrous effect on investigation of this intricate problem. My results completely disprove Strasburger's conclusion. The records obtained by my apparatus show that a complete arrest of ascent takes place under the action of poison. Experiments prove that a definite active tissue extends throughout the length of the tree, the cellular pulsations of which in regular sequence cause by their pumping action the propulsion of sap. In the animal the circulation is maintained by the pumping action of the throbbing heart. Since the mechanism for the movement of sap is essentially similar, the tree may be regarded as possessing an elongated "heart."

The "Heart" of a Plant.

The effects of various agents on the "heart-beats" of the tree and of the animal exhibit most astonishing similarities, of which I shall mention only a few instances. In the case of the animal it is well known that the frequency of heart-beat is quickened under a rise and slowed down under a fall of temperature, till at a sufficiently low temperature the rhythmic activity becomes arrested. Under certain abnormal conditions when the beating of the animal heart is arrested it can be renewed by adequate stimulation. Certain stimulants cause a great enhancement of the pulsatory activity while poisons arrest it. Results in every way parallel to these are observed in the cellular pulsation of the tree. Rise of temperature increasing the pulsatory activity enhances the rate of ascensional movement of the sap. Lowering of temperature, on the other hand, causes a depression of the rate, till at a critical temperature the ascent becomes arrested. A slight rise of temperature above the critical point, however, renews the ascent. Under condition of sub-tonicity the cellular activity and the resulting movement of sap become arrested. Stimulus is now found to revive the activity and renew the ascent. Very striking results are produced by the action of anæsthetics which in a small dose acts as a stimulant. A small dose of ether is thus found to enhance the cellular pulsation and cause a great increase in the rate of ascent. Chloroform causes a preliminary enhancement followed by arrest caused by the toxic effect of a large dose.

The Electric Probe for Record of the Internal Pulsation.

My experiments proved that the movement of sap is maintained by the pulsating activity of certain cells. The next problem was the localisation of the pulsating layer, and to obtain an actual record of the individual pulsation and watch its responsive variations under drugs and other agents. For this we have to get access to the smallest unit of life, the individual cell. But the pulsatory movement of a cell is ultra-microscopic and its detection may well appear to be beyond the range of possibility. This has, however, been accomplished by my electric probe in circuit with a recording galvanometer. The probe is gradually introduced across the tree, its tip thus coming in contact with successive layers of cells. The record thus obtained is thrown on the screen, from which it will be seen that the galvanometer remained quiescent till the probe came in contact with the active layer, whose throbbing pulsations gave rise to corresponding electric pulsations recorded by the galvanometer. In dicotyledenous plants it is the inner layer of cortex which functions as the organ for the propulsion of sap. Moreover, any agent which quickens or arrests the heart-beat of the animal is also found to enhance or inhibit the electric heart-beat of the tree. The fluctuations of the life-activity in the interior of the tree are revealed by the waxing and waning of its pulse-records. We are now in a position to realise the essential similarity of physiological mechanism in the maintenance of circulation in the plant and in the animal.

Assimilation in Plants.

It is through these incessant internal activities that the tree is enabled to raise large quantities of water to a height sometimes as great as 450 feet, as in the giant eucalyptus. The energy for doing this work is in the breakdown of complex chemical substances in internal combustion or respiration. The phenomenon of CO_2 assimilation in plants is of great theoretical interest as an example of the simplest type of assimilation. In normal photosynthesis a certain volume of CO_2 is absorbed and an equal volume of oxygen evolved. Photosynthetic activity may therefore be measured from the rate of absorption of CO_2 or of evolution of oxygen. I devised a photosynthetic recorder, by which the evolution of pure oxygen becomes automatically recorded. The method is automatic and so extremely sensitive that it is possible to measure photosynthetic deposit of carbohydrate as minute as a millionth of a gramme. The extreme sensitiveness and accuracy of the new method has led to the discovery of several important phenomena which otherwise would have been impossible. Stimulation is found to produce characteristic modification in the assimilation. The immediate and concrete demonstration of the effect of minute traces of chemicals—e.g., on assimilation of plants—is of special interest, since it enables us to understand the effects of ultra-measurable quantities of vitamins on general assimilation and of hormones on physiological reaction.

The "Nerves" of a Plant.

The plant is a multicellular organ and hence necessity arises for intercommunication and interaction between more or less distant organs; this is accomplished in two different ways; the first is exemplified by the hydraulic convection of liquids carrying chemical substances in solution such as occurs in the circulation of sap. The second mode of intercommunication is the conduction of excitatory change along certain tissues in the plant which function as nerves.

The ultimate result of investigations such as these and others which I have been able to complete is the establishment of the important generalisation of the unity of physiological mechanism in all life. For we find in the plant and in the animal similar contractile movement under stimulus, similar reaction under particular drugs, similar cell-to-cell propagation of pulsatory movement, similar circulation of fluid by pumping action, similar nervous mechanism for the transmission of excitation, and similar reflex movements at the distant effector. The simpler type of plant organisation offers an unique advantage in investigation, the pursuit of which will no doubt lead to the solution of many perplexing problems of animal life.

THE GEOGRAPHICAL METHOD.

Dr. Saleeby has invented a new method of medical research. "Being without patients and laboratories," he writes,[1] "I applied the geographical method." Put more plainly this means that Dr. Saleeby, being without clinical experience (as he himself admits more than once in this book) and without more than the rudiments of pathological knowledge, travels about visiting hospitals, sanatoriums, and laboratories, and picks up stray information here and there. Although Dr. Saleeby describes himself as a life-long student and worshipper of light, it was only two years ago that he discovered that other people had discovered the value of heliotherapy in tuberculosis. Under his very nose, so to speak, Sir Henry Gauvain had practised heliotherapy in this country, and in the same memorable year that the veil of ignorance was lifted from the eyes of Dr. Saleeby by a visit to Leysin, Sir Henry Gauvain published in our columns a paper in which he emphasised the value of heliotherapy as an important adjuvant to the treatment of tuberculosis, but not as a cure for tuberculosis. It is one of the advantages of the geographical method that it enables Dr. Saleeby to describe himself as "the person most responsible for the arrival of the sun cure in England." He is an interesting example of what the psychologists call "projection." He is under the impression that the routine treatment of surgical tuberculosis is by operation, and he projects his own ignorance on to the medical profession. He does not realise that at Leysin, as anywhere else, the principle underlying the treatment is largely rest of the affected part. "The patient is cured by the action of light on the skin" (p. 67). He himself has realised for the first time that the resistance of the patient to the infection is an important factor in the treatment of tuberculosis, and writes as though bacteriologists generally were in the same position. We get this picture of Dr. Saleeby's conceptions before his journey to Leysin: "Is it stupid or, at most, is it merely half and not wholewitted to consider only the toxicity of the guest and not the readiness to be poisoned of the host? The bacteriologist with one eye looking at the bacteria through the microscope, and *the other shut* is the type and warning of the danger which many of us have not escaped" (p. 39).

From his wanderings Dr. Saleeby returns to London, and now—behold the results of the geographical method which dispenses with patients and laboratories. It has taught him that sunlight cures and prevents tuberculosis. He is aware

[1] Sunlight and Health. By C. W. Saleeby, M.D. London: Nisbet and Co. 1923. Pp. 178. 5s.

that this teaching will meet with opposition, but being a practised controversialist he undermines the position of his opponents, saying: "Very formidable vested interests in the knife and the bottle will have to be combated" (p. 105). He demands an inquiry into the physiological action of light, evidently ignorant of the not inconsiderable literature on the subject which already exists. All this set forth in "words of learned length and thundering sound impressed the gazing rustics ranged around." Coincidently the Medical Research Council appointed a committee to investigate this subject. Dr. Saleeby predicts that "from the date of the appointment of the Special Committee, under the chairmanship of Sir William Bayliss, a new chapter in clinical and preventive medicine will be seen to begin."

The chapters in this book are loosely strung together and appear to have been taken from popular essays and lectures, although that is not clearly stated. In any case the writing is not that of a clinician or a scientist who pledges his reputation for the statements he makes, but that of a journalist whose gift of popular exposition, exercised doubtless with a sincere belief in the truth of what he writes, nevertheless appeals most to the reader who prefers a well-turned phrase to accuracy and to whom a stunt is the breath of life. No responsible person acquainted with the complexity of the problem involved in the ætiology of tuberculosis would be tempted even by the alliterative ring of the word to call it "a disease of darkness" and classify it with rickets. Sir Henry Gauvain states that light by itself does not cure tuberculosis. He looks upon it as an important adjuvant in the treatment. But then he has patients, and is therefore not a true disciple of the geographical method. Surely Sir William Bayliss, who contributes a preface to this book, has not accepted the geographical method as a trustworthy guide? He certainly commits himself to the statement that light can cure and prevent tuberculosis.

Now, light is a powerful weapon in our therapeutic armoury. But it is doing heliotherapy an ill-service to treat light as a patent medicine, and make exaggerated and foolish claims for it. And it is not only foolish, but mischievous to teach that tuberculosis is a disease of darkness and can be cured by light. We associate ourselves with the statement of Dr. F. E. Wynne, medical officer of health in Sheffield, which Dr. Saleeby holds up to ridicule in his book: "No one who has the true interests of our tuberculous population at heart can fail to regret Dr. Saleeby's suggestion that sunshine can cure tuberculosis."

PUBLIC HEALTH IN INDIA.

Hospital and Prison Administration in the United Provinces.

THE Civil Hospitals and Dispensaries in the United Provinces numbered 661 at the beginning of 1921; six were closed and five new institutions opened during the year. The patients treated (5,718,724) showed a decrease of 70,207 on the figures for 1920, but were more numerous than in any of the five years preceding. The cases of cholera and dysentery numbered 11,372 and 127,142 respectively, both much in excess of those in 1920; malaria (1,242,208 cases), rheumatism, and venereal diseases showed a considerable decrease. Plague caused 24,009 deaths in the province, a slight decrease on the mortality (24,872) of the previous year; only 16 cases were admitted to hospital, of whom six died. The number of inoculations performed was 14,906, compared with 36,453 in 1920, efforts having been concentrated on an anti-rat campaign. Colonel J. K. Close, I.M.S., Inspector-General of Civil Hospitals for the province, notes in his report [1] that the system of charging patients able to pay has continued to act satisfactorily, and that no complaints have been received as to charges made; the total sum realised was Rs.32,645.

In his report on the administration of the jails [1] in the United Provinces, for 1921, Lieut.-Colonel J. M. Woolley, I.M.S., Inspector-General of Prisons for the province, notes that, on the occasion of the visit of H.R.H. the Prince of Wales, 3804 convicts were released, and that a considerable number were given remission of sentences; but, on account of the admission of a large number of political prisoners, very heavy extra work had been thrown on the department; moreover, the unhealthy conditions during the autumn and widespread epidemic diseases, following a period of intense heat, had a prejudicial effect on the health of the prisoners. The total number of prisoners that passed through the jails during the year was 109,130, as compared with 103,366 in the previous year; the daily average present being 25,164, an increase of 356 over the jail population in 1920. Transportation convicts are now detained in the Central Prisons, consequent on the abolition of transportation; a proposal for a special jail for this class of prisoners is now under consideration. As regards the health of the prisoners, the admissions to hospital were 607·8, the average daily sick 23·5, and the deaths 21·4 per 1000, as compared with 588·6, 22·6, and 17·0 in the previous year; the increase in mortality was chiefly due to pulmonary tuberculosis (79 deaths, compared with 64 in 1920), pneumonia (76 against 63), and heat-stroke (26). This last mortality is unusually high; it occurred throughout the province, mostly in mid-June; in many jails hard labour was curtailed in the middle of the day. There were 47 admissions to hospital for cholera, of which 22 ended fatally. Of the 42,827 convicts discharged during the year no less than 65·83 per cent. had gained weight, and only 9·58 per cent. lost weight. Lieut.-Colonel Woolley notes that "the year has been remarkable for the large number of political prisoners admitted . . . under the Criminal Law Amendment Act. . . . The spirit of lawlessness was noticeable even among ordinary prisoners, and the officials dealt with it firmly and with much tact and patience."

[1] Allahabad: Government Press. 1922

WHAT IS A MOSQUITO?

THERE has been a widespread idea that a mosquito is a particular species of insect inhabiting the tropics. And this harmful idea the third edition of Mr. F. W. Edwards's admirable little pamphlet on "Mosquitoes and their Relation to Disease" will greatly help to dispel. The pamphlet is No. 4 of an Economic Series issued by the trustees of the British Museum (Natural History) and is designed to be of use to those who visit the museum as well as to a wider public whose safety lies in a knowledge of the life-history, habits, and control of the mosquito. A short bibliography is attached to the pamphlet, the price of which is 4*d*.

THE KIND OF NURSE SHE WANTS.

To the Editor of THE LANCET.

SIR,—It is pleasing to know that "A Middle-class Patient" agrees that nurses are entitled to a high standard of comfort. She need not have worried about extra accommodation, as there are visiting nurses in London and other towns in the provinces who would attend to her physical needs once or twice daily for a very moderate fee. These nurses are well trained, and work under the direction of the family practitioner. The patient will find in the Telephone Buff Book the names and addresses of over 200 visiting nurses in London.

I am, Sir, yours faithfully,

CHRISTINE S. CRAWFORD,
Visiting Nurse.

London, Dec. 8th, 1923.

CROSSED KNEES AND VARICOSE VEINS.

To the Editor of THE LANCET.

SIR,—I suggest that one of the earliest factors operating in the causation of varicose veins of the legs is the habit of crossing one knee over the other. I can conceive no position better calculated to retard the normal flow of blood in the superficial veins of the lower extremities. The pressure catches the internal saphenous vein where it passes slightly behind the knee-joint, while the external vein is blocked by the pressure in the popliteal space. No wonder their valves become disorganised in the course of years.

I am, Sir, yours faithfully,

HENRY GEO. DIXON, M.R.C.S., &c.

City-road, London, E.C., Dec. 3rd, 1923.

*** The thesis would be strengthened by some evidence that venous compression does actually take place.—ED. L.

A HANDY TABLE OF FOOD VALUES.

INSULIN, however useful it may be, does not, of course, do away with the necessity for dietetic restriction. After the initial fast it is usual to place the diabetic patient upon a diet of about 12 calories to each pound of body-weight, with definite proportions of protein and carbohydrate, fat then being added to make up the proposed total. To carry this out with success requires accurate knowledge of foodstuffs and their caloric values, and Dr. Sinclair Miller and Dr. F. B. Smith, of the Clinical Laboratory, Harrogate, have compiled some useful Tables of Food Values to assist in securing accurate dietetic control. It is obviously desirable to make a patient's diet as variable and attractive as possible within the limits prescribed, and by the use of these tables alternative diets of fixed food value can be arranged in considerable variety. Three tables are given dealing with foods containing chiefly carbohydrates, proteins, and fats respectively, arranged in alphabetical order. In each case the content of the foodstuff in grammes of carbohydrate, protein, and fat, with the total calories, is immediately to be found. The price is 1*s*., and the publishers Messrs R. R. Browne and Co., Belfast.